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AND

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SHELDON & COMPANY,
NEW YORK AND CHICAGO.

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Article 90.

14. $\$8420+\$1328=\$9748$;
$\$9748-\$3575=\$6173$, *Ans.*

16. $\$8568+\$23975=\$32543$
$\$11875+\$17835=\underline{29710}$
$\$2833$, gain

18. $\$61235-\$9876=\$51359$;
$\$185625-(\$61235+\$51359)=\$73031$, *Ans.*

19. $\$15875-\$3738=\$12137$;
$\$15875+\$12137+\$45673=\$73685$, *Ans.*

Art. 119.

13. $\$4.37\times165\times23=\$16584.15$, *Ans.*

14. $\$85\times389=\$33065$
$\$49\times465=\underline{22785}$
$\$10280$, *Ans.*

15. $(\$63\times325)+(\$87\times247)=\$41964$;
$\$76\times(325+247)=\$43472$;
$\$43472-\$41964=\$1508$, *Ans.*

16. $\$1.71-\$1.53=\$.18$, gain on 1 bushel;
$\$.18\times36\times413=\$2676.24$, *Ans.*

17. $(\$2735-\$2375.74)\times23=\$8262.98$, *Ans.*

18. $(\$7.63\times975)+(\$.37\times1235)+\$1828.80=\$9725$;
$\$15000-\$9725=\$5275$, *Ans.*

21. $\$1.15\times15\times375=\$6468.75$, cost;
$(\$1.38\times3756)+(\$.98\times1869)=\$7014.90$;
$\$7014.90-\$6468.75=\$546.15$, gain,

Art. 144.

10. $(\$13530-\$1155)\div165=\$75$, *Ans.*

11. $\$17696-(\$42\times138)=\$11900$; $\$11900\div68=\$175$, *Ans.*

12. $(\$1023.70+\$17.50)\div\$1.37=760$, the No. of bushels.

13. $\$12563.25\div\overline{(35\times43)+(56\times47)+(78\times39)}=\$1.75$, *Ans.*

Art. 194.

13. $\$23\div(18\frac{1}{2}-12\frac{3}{4})=\$4$, *Ans.*

14. $\$620\div(\$69\frac{3}{4}\div9)=80$, the No. of cords.

15. $\$654\frac{3}{4}\div(\$53\div5\frac{8}{9})=72\frac{3}{4}$, the No. of yards.

Art. 234.

8. $\$4375\div\$1\frac{1}{6}=3750$, No. of bushels;
3750 bu. $\div\,8=468\frac{3}{4}$ bushels in a car.

9. $\$1980\div\$4\frac{1}{8}=480$, No. of tons; $\$5\frac{3}{4}\times480=\$2760$;
$\$2760-\$1980=\$780$, gain.

10. $\$1\frac{1}{3}-\$1\frac{1}{8}=\$\frac{5}{24}$, gain on 1 bushel; $\$\frac{5}{24}\times19864=\$4138\frac{1}{3}$, gain.

Art. 241.

1. $\$1.85\times25=\$46.25$
$3.75\times18\frac{3}{4}=70.3125$
$1.63\times22=35.86$
$4.25\times7=\underline{29.75}$
$\$182.1725$, *Ans.*

3. $\$3.75\times22\frac{1}{2}=\$84.375$
$1.38\times5=6.90$
$.09\times43=3.87$
$2.25\times4=9.00$
$.75\times2\frac{1}{2}=1.875$
$1.13\times15=16.95$
$1.88\times30=56.40$
$1.75\times6=10.50$
6.00
$1.67\times21=\underline{35.07}$
$\$230.94$, *Ans.*

2. $\$14.00\times3\times6=\$252.00$
$7.50\times2\times6=90.00$
$1.50\times8=12.00$
$.50\times14=7.00$
$1.10\times13\frac{1}{2}=14.85$
$\underline{2.75}$
$\$378.60$, *Ans.*

4. $\$.12\times183=\$21.96$
$.02\times1200=24.00$
$.09\times114=10.26$
$.45\times54=24.30$
$.11\times45\frac{3}{4}=5.03\frac{1}{4}$
$.09\times150=13.50$
$.16\times168=26.88$
$.95\times16=15.20$
$.25\times190=\underline{47.50}$
$\$188.63\frac{1}{4}$, *Ans.*

Art. 244.

1. $\$.08 \times 13\frac{1}{2} = \$1\ 08$
$.32 \times 5\frac{3}{4} = 1.84$
$.18 \times 8\frac{3}{4} = 1.575$
$.09 \times 12\frac{1}{2} = 1.125$
$.12 \times 5\frac{1}{2} = .66$
$.11 \times 6\frac{3}{4} = .7425$
$\$7.0225$, *Ans.*

2. $\$1.87 \times 76 = \$142.12$
$1.25 \times 84 = 105.00$
$1.12 \times 22 = 24.64$
$.88 \times 57 = 50.16$
$.09 \times 135 = 12.15$
$4.75 \times 5 = 23.75$
$.58 \times 41\frac{3}{4} = 24.215$
$1.60 \times 15\frac{3}{4} = 25.20$
$\$407.235$, *Ans.*

3. $\$4.33 \times 75 = \$324.75$
$4.12 \times 168\frac{3}{4} = 695.25$
$18.00 \times 24\frac{3}{4} = 445.50$
$2.62 \times 96\frac{4}{5} = 253.616$
$6.38 \times 48 = 306.24$
$4.75 \times 35\frac{3}{4} = 169.8125$
$\$2195.1685$, *Ans.*

Art. 245.

1. $\$.12\frac{1}{2} \times 256 = \$32.00$
$.09 \times 94\frac{3}{4} = 8.52\frac{3}{4}$
$.16 \times 68 = 10.88$
$.10 \times 325 = 32.50$
$.14 \times 75 = 10.50$
$.18 \times 32\frac{3}{4} = 5.89\frac{1}{2}$
$\$100.30\frac{1}{4}$, *Ans.*

2. $\$8.62\frac{1}{2} \times 36 = \$310.50$
$9.25 \times 43 = 397.75$
$.03\frac{3}{4} \times 875 = 32.81\frac{1}{4}$
$.02\frac{2}{3} \times 486 = 12.96$
$.04\frac{3}{4} \times 186 = 8.83\frac{1}{2}$
$7.75 \times 91 = 705.25$
$\$1468.10\frac{3}{4}$, *Ans.*

3. $\$.09\frac{1}{2} \times 650 = \$61.75$
$1.12\frac{1}{2} \times 25 = 28.12\frac{1}{2}$
$.28\frac{2}{3} \times 533 \times 87 = 13293.02$
$.21\frac{2}{5} \times 75 \times 185 = 2969.25$
$.08\frac{1}{3} \times 1680 = 140.00$
$.06\frac{2}{3} \times 560 = 37.33\frac{1}{3}$
$.06\frac{1}{4} \times 95 = 5.93\frac{3}{4}$
$.07\frac{3}{4} \times 32 \times 200 = 496.00$
$\$17031.41\frac{7}{12}$, *Ans.*

Art. 248.

5. **63360 in. = 1 mile.**
(63360 × 90) ÷ 36 = 158400, the No. of steps.

16. **27 in. = $\frac{3}{4}$ yd.**
$\frac{1}{3}$ of \$1.35 = \$.45, value $\frac{1}{4}$ yd. wide.
\$.45 × 4 = \$1.80, *Ans.*

21. **396 × 120 × 6 = 285120, No. of feet.**

23. **\$3.88 − \$3.67 = \$.21, difference on 1 yd.**
\$.21 × 19$\frac{3}{4}$ = \$4.14$\frac{3}{4}$, *Ans.*

26. **(\$1389.04 ÷ \$3.88) ÷ 8 = 44$\frac{3}{4}$, the No. of yds.**

27. **896 ft. + 789 ft. + 886 ft. + 795 ft. = 3366 ft. = 204 rods.**
\$127.50 ÷ 204 = \$.62$\frac{1}{2}$, per rod.

Art. 251.

3. **\$.18 × 41$\frac{1}{2}$ = \$7.47, cost. \$.03 × (41$\frac{1}{2}$ × 8) = \$9.96, selling price.**
\$9.96 − \$7.47 = \$2.49, gain.

4. **\$.08 × (12 × 10$\frac{1}{2}$ × 4) = \$40.32,** *Ans.*

5. **\$.15 × (5 × 43$\frac{3}{4}$) = \$32.81$\frac{1}{4}$, cost.**
\$.08 × (218$\frac{3}{4}$ × 4) = \$70, selling price.
\$70 − \$32.81$\frac{1}{4}$ = \$37.18$\frac{3}{4}$, gain.

6. **40 gal. = 320 pts.**
320 pts. ÷ 5 pts. = 64, the number of times.

7. **19$\frac{1}{2}$ gal. = 78 qts. 2$\frac{7}{8}$ lb. × 78 = 224$\frac{1}{4}$ lb.**
\$.25 × 224$\frac{1}{4}$ = \$56.06$\frac{1}{4}$, *Ans.*

8. **10$\frac{3}{4}$ gal. × 28 = 301 gal. = 1204 qts. each day.**
\$.10 × 1204 × 7 = \$842.80, each week.

9. **44$\frac{1}{4}$ gal. = 1320 gills. \$.03 × 1320 = \$39.60, selling price.**
\$39.60 − \$25.00 = \$14.60, gain.

10. **\$1.40 × 12$\frac{3}{4}$ = \$17.85, cost.**
\$.12 × (12$\frac{3}{4}$ × 4 × 2 × 4) = \$48.96, selling price.
\$48.96 − \$17.85 = \$31.11, gain.

11. **63 gal. = 504 pts. 19 gal. 3 qts. 1 pt. = 159 pts.**
504 pts. − 159 pts. = 345 pts. = 43 gal. 1 pt., *Ans.*

12. $31\frac{1}{2}$ gal. = 1008 gi.
24192 gi. ÷ 1008 gi. = 24, the No. of barrels.

13. $1.25 × $90\frac{3}{4}$ = 113.43\frac{3}{4}$, cost.   90 gal. 3 qts. = 726 pts.
$.37$\frac{1}{2}$ × 726 = $272.25, selling price.
$272.25 − 113.43\frac{3}{4}$ = 158.81\frac{1}{4}$, gain.

14. 24 gal. 3 qts. 1 pt. = 796 gi.
796 gi. ÷ 2 gi. = 398, the No. of bottles.

15. 12 gal. 1 qt. 1 pt. = 99 pts. for 1 gal. syrup.
99 pts. × 3 = 297 pts., *Ans.*

16. 5 gal. 2 qts. 1 pt. = 45 pts. = 90 half-pts.
$.12$\frac{1}{2}$ × 90 = $11.25, selling price.
$.05 × 90 = $\underline{4.50}$, cost of jars.
$6.75, net amount received.

Art. 254.

6. $3.20 × $3\frac{3}{4}$ = $12, cost.   3 bu. 3 pks. = 120 qts.
$.15 × 120 = $18, selling price. $18 − $12 = $6, gain.

9. 9 bu. 3 pks. 6 qts. 1 pt. = $318\frac{1}{2}$ qts.
$.17 × $318\frac{1}{2}$ = 54.14\frac{1}{2}$, money for nuts.
$1.35 × $18\frac{3}{4}$ = $\underline{25.31\frac{1}{4}}$, price of dress.
28.83\frac{1}{4}$, amount left.

10. 2 pks. = $\frac{1}{2}$ bu.; 4 qts. = $\frac{1}{8}$ bu.   5 bu. + $\frac{1}{2}$ bu. + $\frac{1}{8}$ bu. = $5\frac{5}{8}$ bu.
$16.40 × $5\frac{5}{8}$ = $92.25, value of seed.
$92.25 ÷ $2.25 = 41, No. of cwt. = 4100 lb.

11. 3 bu. 1 pk. 6 qts. = $13\frac{3}{4}$ pks. in 1 barrel.

$13\frac{3}{4}$ pks. × 6 = $82\frac{1}{2}$ pks. = 165 half-pks. in 6 bbl.
$.20 × 165 = $33.00, receipts.
$3.75 × 6 = $\underline{22.50}$, cost.
$10.50, gain.

12. 2 bu. 3 pks. = $2\frac{3}{4}$ bu.   184 pears × $2\frac{3}{4}$ = 506 pears.
$.03 × 506 = $15.18, receipts.
$3.60 × $2\frac{3}{4}$ = $\underline{9.90}$, cost.
$5.28, gain.

13. 2 bu. 3 pks. 4 qts. = 92 qts. = $2\frac{7}{8}$ bu.
$2.80 × $2\frac{7}{8}$ = $8.05, cost of one bag.
$8.05 × 6 = $48.30, total cost.
$.14 × (92 × 4) = $51.52, rec. on 4 bags.
$.05 × (184 × 2) = 18.40, " " 2 "
$69.92, total receipts.
$69.92 − $48.30 = $21.62, gain.

14. 1 pk. 2 qts. = 10 qts. 15 bu. 2 pks. 4 qts. = 500 qts.
500 qts. ÷ 10 qts. = 50 times.

15. $12\frac{3}{4}$ bu. = 51 pks. = 102 half-pks.
$.25 × 102 = $25.50, receipts.
$1.50 × $12\frac{3}{4}$ = 19.12$\frac{1}{2}$, cost.
6.37\frac{1}{2}$, gain.

Art. 259.

6. 2240 lb. × 175 = 392000 lb. bought.
392000 lb. ÷ 2000 = 196 tons sold.
$3.85 × 196 = $754.60, receipts.
$3.75 × 175 = 656.25, cost.
$98.35, gain.

7. 8 lb. 10 oz. = $8\frac{5}{8}$ lb. $.70 × $8\frac{5}{8}$ = 6.03\frac{3}{4}$, *Ans.*

8. $.05$\frac{3}{4}$ × 1895 = 108.96\frac{1}{4}$, cost. $\frac{3}{5}$ of 1895 lb. = 1137 lb.
$.37 × 1137 = $147.81, receipts.
108.96$\frac{1}{4}$, cost.
38.84\frac{3}{4}$, gain.

9. 2240 lb. × 18 = 40320 lb.
2000 lb. × 20 = 40000 lb.
320 lb., excess.

10. 5 lb. 4 oz. = 84 oz.
84 oz. ÷ $1\frac{3}{4}$ oz. = 84 × $\frac{4}{7}$ = 48, the No. of spoons.

12. $3\frac{3}{4}$ cwt. = 375 lb. $.37 × 375 = $138.75, *Ans.*

13. $20.79 ÷ 891 = $.023$\frac{1}{3}$ per lb. $.023$\frac{1}{3}$ × 60 = $1.40 per bushel

14. 2 lb. 12 oz. = 44 oz. 13 cwt. 9 lb. = 20944 oz.
20944 oz. ÷ 44 oz. = 476, No. of cans.

Art. 264.

2. (\$987.50 + \$193.80) + \$987.50 = \$2168.80, *Ans.*

3. To A, $346\frac{5}{8}$ acres.
" B, $346\frac{5}{8} + 191\frac{1}{2} = 538\frac{1}{8}$ "
" C, $92\frac{3}{4} + 346\frac{5}{8} + 538\frac{1}{8} = 977\frac{1}{2}$ "
Had left, $1238\frac{7}{8}$ "
$3101\frac{1}{8}$ acres at first, *Ans.*

7. \$275 × 4 = \$1100, cost.
\$1100 + \$75.25 + \$21.50 + \$37.75 + 16.65 = \$1251.15, receipts.

12. $\frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{4+3+2}{12} = \frac{9}{12} = \frac{3}{4}$, *Ans.*

18. Youngest, $18\frac{3}{4}$ qts.
Second, $18\frac{3}{4} + 9\frac{1}{4} = 28$ "
Oldest, $28 + 5\frac{1}{2} = 33\frac{1}{2}$ "
Father, $33\frac{1}{2} + 12\frac{3}{4} = 46\frac{1}{4}$ "
Total, $126\frac{1}{2}$ qts.

20. 13 T. 15 cwt. = $13\frac{15}{20}$ T.
$25\frac{7}{10}$ T.
18 T. 12 cwt. = $18\frac{12}{20}$ T.
$58\frac{1}{20}$ T.

Art. 265.

3. $8\frac{5}{8}$ lb. + $7\frac{1}{4}$ lb. + $4\frac{1}{2}$ lb. + $12\frac{7}{8}$ lb. = $33\frac{1}{4}$ lb., sold.
$63\frac{3}{4}$ lb. − $33\frac{1}{4}$ lb. = $30\frac{1}{2}$ lb. remaining.

4. $5\frac{3}{4}$ ft. + $7\frac{5}{6}$ ft. = $13\frac{7}{12}$ ft. $18\frac{1}{4}$ ft. − $13\frac{7}{12}$ ft. = $4\frac{2}{3}$ ft. remaining.

5. $\frac{1}{4} + \frac{1}{5} = \frac{4+5}{20} = \frac{9}{20}$ expended. The whole or $\frac{20}{20} - \frac{9}{20} = \frac{11}{20}$ left, *Ans.*

6. \$11175, wife.
\$11175 − \$975 = 10200, son.
\$10200 − \$6350 = 3850, daughter.
\$29450 − \$25225 = \$4225, sister.

12. $\$5\frac{3}{4}$, Henry.
$\$5\frac{3}{4} + \$2\frac{9}{10} = 8\frac{13}{20}$, Charles.
$\$8\frac{13}{20} + \$3\frac{1}{2} = 12\frac{3}{20}$, James.
$\$26\frac{11}{20} - \$17\frac{3}{5} = \$8\frac{19}{20}$, *Ans.*

13. \$20 − (\$5.15 + \$4.90 + \$5.80) = \$4.15, *Ans.*

14. \$100 − \$19.21 change = \$80.79 spent.
\$80.79 − (\$35.17 + \$23.47 + \$5.38) = \$16.77, cost of rug.

15. $40\frac{2}{3}$ yds.
$26\frac{1}{2}$ "
$14\frac{1}{6}$ yds. for both suits.
$7\frac{3}{4}$ " " first suit.
$6\frac{5}{12}$ yds. for second suit.

$\frac{2}{3}-\frac{1}{2}=\frac{4-3}{6}=\frac{1}{6}$

16. \$15.37½, amount of bill.
10.00, on account.
\$5.37½, balance.
7.62½, new bill.
\$13.00, last payment

17. 40 ft. − $5\frac{1}{2}$ ft. = $34\frac{1}{2}$ ft., 3 weeks' work.
$15\frac{5}{8}$ ft. + $12\frac{3}{4}$ ft. = $28\frac{3}{8}$ " 2 " "
$6\frac{1}{8}$ ft., 3d week's work, *Ans.*

18. 65 yds. 27 in. = $65\frac{27}{36}$ yds.
58.5 yds. = $58\frac{1}{2}$ "
$81\frac{2}{3}$ "
75 yds. 9 in. = $75\frac{9}{36}$ "
$281\frac{1}{6}$ yds., *Ans.*

19. 697 lb. 8 oz. = $697\frac{1}{2}$ lb., 1st lot.
$537\frac{5}{8}$ " 2d "
$1235\frac{1}{8}$ lb.

$1843\frac{3}{4}$ lb.
$1235\frac{1}{8}$ "
$608\frac{5}{8}$ lb., 3d lot, *Ans.*

Art. 266.

1. $2\frac{5}{8}$ lb. × 144 = 378 lb. in all. \$.04 × 378 = \$15.12, *Ans.*

2. \$$5\frac{1}{2} \times 17\frac{3}{4} = \frac{11}{2} \times \frac{71}{4} = \frac{781}{8}$ = \$$97\frac{5}{8}$.
\$$5\frac{1}{4}$ × 24 = \$126 + \$$97\frac{5}{8}$ = \$$223\frac{5}{8}$, cost of both, *Ans.*

3. $1\frac{3}{4}$ tons × 8 = 14 tons in all.
\$17.85 × 14 = \$249.90, receipts, *Ans.*

4. \$28.60 − \$11.90 = \$16.70 saved each week.
\$16.70 × 52 = \$868.40, *Ans.*

5. 8) \$18640
\$2330, value of $\frac{1}{8}$.
7
\$16310, value of $\frac{7}{8}$, *Ans.*

6. 4) 18 yds.
$4\frac{1}{2}$ yds.
3
$13\frac{1}{2}$ yds. used, *Ans.*

8. 25 cts. ÷ 3 = $8\frac{1}{3}$ cts., cost of 1 lb. \$.08$\frac{1}{3}$ × 216 = \$18, *Ans.*

12. $\frac{3}{3}$ or whole debt − $\frac{2}{3}$ = $\frac{1}{3}$ still owed. $\frac{1}{3}$ of \$725 = \$$241\frac{2}{3}$, *Ans.*

13. $\$1.37 \times 996 = \$1364.52$, cost. 49 lb. $\times 996 = 48804$ lb. of flour.
11 lb. $\times 996 = 10956$ lb. of bran.
48804 lb. $\div 196$ lb. $= 249$, the No. of barrels.
$\$8.75 \times 249 = \$2178.75$, rec'd for flour.
$\$.02 \times 10956 = 219.12$, " " bran.
$\$2397.87$
$\$.25 \times 249 = 62.25$, cost of barrels.
$\$2335.62$, net receipts.
1364.52, cost.
$\$971.10$, gain, *Ans.*

14. $\$4.68 \times 875 = \$4095$, the first way.
$\$4.79 \times 495 = \$2371.05$
$\$4.56 \times (875-495) = 1732.80$
$\$4103.85$, the second way.
$\$4103.85 - \$4095 = \$8.85$, gain the latter way, *Ans.*

15. $\frac{1}{8}$ of $\$8765 = \$1095\frac{5}{8}$.
$\$1095\frac{5}{8} \times 5 = \$5478\frac{1}{8}$, A's share.
$\$1095\frac{5}{8} \times 3 = \$3286\frac{7}{8}$, B's " , *Ans.*

16. $\$.08\frac{4}{5} \times 250 = \$22$, cost. $\frac{1}{5}$ of $250 = 50$, $\frac{3}{5} = 3 \times 50 = 150$.
$\$.12 \times 150 = \$18$ $\$34$
$\$.16 \times (250-150) = 16$ 22
$\$34$, receipts. $\$12$ gain, *Ans.*

17. $\$3.75 \times 41 \times 16 = \$3460.00$, carpenters.
$\$3.25 \times 13 \times 9 = 380.25$, plasterers.
$\$4.45 \times 13 \times 8 = 462.80$, masons.
625.50, plumbing.
465.85, painting.
3725.00, material.
$\$8119.40$, total cost, *Ans.*

19. $\$.04 \times 258 = \$10.32$, value of flour.
$\$.48 \times 18\frac{3}{4} = 9.00$, " " potatoes.
$\$1.32$, difference in cash, *Ans.*

21. $\$5\frac{3}{4} + \$5\frac{3}{4} + \$6\frac{1}{4} + \$7\frac{1}{2} = \$25\frac{1}{4}$ in 1 week.
$\$25\frac{1}{4} \times 14\frac{2}{7} = \frac{101}{4} \times \frac{100}{7} = \frac{10100}{28} = \$360\frac{5}{7}$, *Ans.*

22. $18\frac{3}{4}$ cts. + $\frac{7}{8}$ ct. = \$.$19\frac{5}{8}$, cost per lb.
\$.$32\frac{1}{2}$ − \$.$19\frac{5}{8}$ = \$.$12\frac{7}{8}$, gain per lb.
\$.$12\frac{7}{8} \times 24 \times 43\frac{3}{4} = \frac{103}{8} \times 24 \times \frac{175}{4}$ = \$$135.18\frac{3}{4}$, entire gain, *Ans.*

23. $2\frac{3}{8}$ gal. × 13 = $30\frac{7}{8}$ gal.
$41\frac{1}{4}$ gal. − $30\frac{7}{8}$ gal. = $10\frac{3}{8}$ gal. lacking, *Ans.*

24. $8\frac{2}{3}$ cts. × $2\frac{3}{4} = \frac{26}{3} \times \frac{11}{4} = 23\frac{5}{6}$ cts., cost of meat in 1 can.
$23\frac{5}{6}$ cts. + $2\frac{1}{2}$ cts. = $26\frac{1}{3}$ cts., cost per filled can.
33 cts. − $26\frac{1}{3}$ cts. = $6\frac{2}{3}$ cts., profit on each can.
$6\frac{2}{3}$ cts. × 1200 = \$80.00 profit, *Ans.*

25.
\$.18 × $371\frac{3}{4}$ = \$$66.91\frac{1}{2}$
\$.16 × 482 = 77.12
\$.15 × (1000 − $853\frac{3}{4}$) = $21.93\frac{3}{4}$
\$$165.97\frac{1}{4}$, receipts.
\$.$12\frac{1}{2}$ × 1000 = 125.00, cost.
\$$40.97\frac{1}{4}$, gain, *Ans.*

Art. 267.

2. \$1406.25, cost.
206.25, gain.
\$1612.50 ÷ 375 = \$4.30, selling price per ton, *Ans.*

4. \$75380 − (\$23750 + \$11875) = \$39755.
\$39755 ÷ 5 = \$7951 to each daughter, *Ans.*

5. $\frac{4}{5}$ of \$5375 = \$4300, cost of grounds.
\$5375 + \$4300 = \$9675, *Ans.*

6. 75 cts. ÷ $3\frac{3}{4} = \frac{300}{4} \div \frac{15}{4}$ = 20 cts. per dozen, *Ans.*

7. 90 cts. ÷ $5\frac{5}{8} = \frac{720}{8} \div \frac{45}{8}$ = 16 cts. per lb., *Ans.*

8. \$19.90 + \$17.90 = \$37.80, wages.
\$37.80 ÷ 27 = \$1.40 per day, *Ans.*

9. \$8.80 × $8\frac{3}{4}$ = \$77, value of flour.
\$77 ÷ \$22 = $3\frac{1}{2}$, the No. of weeks, *Ans.*

10. 161 bu. ÷ $3\frac{5}{6} = \frac{966}{6} \div \frac{23}{6}$ = 42 bu. on each acre, *Ans.*

11. 12 yds. ÷ $\frac{3}{4}$ yd. = $\frac{48}{4} \div \frac{3}{4}$ = 16, the No. of widths.
16 × 15 = 240 yds. in all. \$1.25 × 240 = \$300, cost, *Ans.*

12. $\$2040 \div 12\frac{3}{4} = \frac{8160}{4} \div \frac{51}{4} = \$160$ per acre.
$\$160 \times 145\frac{4}{5} = \$23328$, *Ans.*

13. $\$7\frac{3}{4} \times 160 = \$1240$, value of flour.
$\$1240 \div \$1\frac{3}{5} = \frac{6200}{5} \div \frac{8}{5} = 775$, the No. of bushels, *Ans.*

14. $\$2\frac{4}{5} - \$1\frac{3}{4} = \$1\frac{1}{20}$, gain per yd.
$\$49 \div 1\frac{1}{20} = \frac{980}{20} \div \frac{21}{20} = 46\frac{2}{3}$, the No. of yds., *Ans.*

15.
$41787.25, cost of all.
$\$162\frac{1}{2} \times 168 =$ 27300.00, " " horses.
$14487.25, " " cattle.
$14487.25 ÷ $41.75 = 347, the No. of cattle, *Ans.*

16. $178.35 − $21.75 = $156.60, which is twice the wages of the one earning the less.
$156.60 ÷ 2 = $78.30, the less wages.
$78.30 + $21.75 = $100.05, the greater wages.
$78.30 ÷ 29 = $2.70, daily wages of one.
$100.05 ÷ 29 = $3.45, daily wages of the other.

17. $997.50 − $591.25 = $406.25, gain on all.
$406.25 ÷ $3.25 = 125, the No. of cords, *Ans.*

18. $245 × 185 = $45325, value of farm.
$45325 − $8450 = $36875, value of lots.
$36875 ÷ 59 = $625, cost per lot, *Ans.*

19. 480 gr. × 430 = 206400 gr.
206400 gr. ÷ 258 gr. = 800, the No. of ten-dollar pieces.
$10 × 800 = $8000, *Ans.*

20. $538 × 65 = $34970, entire cost.
3815, amount paid.
$465) $31155, value of lots sold.
67, the No. of lots, *Ans.*

21. $\$1.02 \div 6\frac{3}{8} = \frac{816}{8} \div \frac{51}{8} = \$.16$ per lb. $\$.16 \times 9\frac{3}{4} = \$1.56$, *Ans.*

22. $2\frac{2}{3}$ mi. × 12 = 32 mi., first day.
$66\frac{2}{3}$ mi. − 32 mi. = $34\frac{2}{3}$ mi., second day.
$34\frac{2}{3}$ mi. ÷ 4 mi. = $8\frac{2}{3}$, the No. of hrs. traveled second day.
12 hrs. + $8\frac{2}{3}$ hrs. = $20\frac{2}{3}$ hrs. in all, *Ans.*

23. $\$650 \div \$2\frac{3}{5} = \frac{3250}{5} \div \frac{13}{5} = 250$, the No. of sheep.
$250 \times 2\frac{3}{5} = 650$, the No. of hogs.
$\$4\frac{3}{4} \times 650 = \$3087.50$, price of hogs.
650.00, " " sheep.
$\$4000 - \$3737.50 = \$262.50$, cost of horse, *Ans.*

24. $\$45 \div \$2\frac{2}{5} = \frac{225}{5} \div \frac{12}{5} = 18\frac{9}{12}$, the No. of yds. in each pattern.
$18\frac{9}{12}$ yds. $\times 12 = 225$ yds. in 12 patterns.
225 yds. $+ 15\frac{2}{3}$ yds. $= 240\frac{2}{3}$ yds. at first, *Ans.*

25. $\$180 \times 318\frac{3}{4} =$ $57375, cost of land.
13125, " " buildings.
3) $70500, value $\frac{3}{4}$ of ship.
$23500, " $\frac{1}{4}$ " "
4
$94000, rec'd for ship, *Ans.*

26. $\$70 \div 8\frac{3}{4} = \frac{280}{4} \div \frac{35}{4} = \$8$ per cord.
$\$100 \div \$8 = 12\frac{1}{2}$, the No. of cords, *Ans.*

27. $\$.80 \times 33 \times 63 = \$1663.20$, value of molasses.
$\$1663.20 \div \$.88 = 1890$, the No. of bu., *Ans.*

28. 15 days $\times 12 = 180$ days for 1 man to do the work.
180 days $\div 20 = 9$ days for 20 men.

29. $\$23.40 \times 15 = \$351$, rec'd by all.
$\$351 \div 9 = \$39$ each for 9 men, *Ans.*

30. $13.75, grocer.
9.85, butcher.
$\$4.75 \times 2\frac{3}{5} =$ 12.35, coal.
$\$1.20 \times 5\frac{1}{2} =$ 6.60, potatoes.
22.45, left.
$65.00, entire pay.
$\$65 \div 26 = \$2.50$ per day, *Ans.*

31. $\frac{3}{5}$ of $\$2356.25 = \$1413.75$, to be paid by remaining 325 members.
$\$1413.75 \div 325 = \$4.35$, each member.

32. $\$95.50 \times 168 = \$16044$, cost of land.
$\frac{3}{8}$ of $\$16044 = \$6016\frac{1}{2}$, cost of buildings.

33. 104 mi. $\div 3\frac{7}{15} = \frac{1560}{15} \div \frac{52}{15} =$ 30 mi. per hr., *Ans.*

34. $2\frac{7}{12}$ mi. + $3\frac{2}{3}$ mi. = $6\frac{1}{4}$ mi. apart in 1 hour.
100 mi. $\div 6\frac{1}{4}$ mi. $= \frac{400}{4} \div \frac{25}{4} =$ 16, the No. of hrs., *Ans.*

Art. 290.

2. $\frac{\$1.25 \times 3 \times 24}{\$.15 \times 32 \text{ (qts. in bu.)}} = 18\frac{3}{4}$, the No. of bushels, *Ans.*

3. $\frac{\$.375 \times 45 \times 24}{\$.125 \times 60} = 54$, the No. of yds., *Ans.*

4. $\frac{\$2.25 \times 26 \times 9}{27 \times 13} = \$1.50$, *Ans.*

5. $\frac{\$.375 \times 360}{\$.25 \times 60} = 9$, the No. of barrels, *Ans.*

6. $\frac{\$.60 \times 16 \times 3 \times 4}{\$.15 \times 2 \times 32} = 12$, the No. of crates, *Ans.*

7. $\frac{28 \times 8 \times 9}{6 \times 21} = 16$, the No. of men, *Ans.*

8. $\frac{\$.18 \times 8 \times 20}{\$.12 \times 15} = 16$, the No. of boxes, *Ans.*

9. $\frac{\$1.25 \times 342 \times 15}{\$2.25 \times 10} = 285$, the No. of crates, *Ans.*

Art. 298.

1. The G. C. D. of 12549 and 14523 = 141, the greatest whole No. of dollars that can be paid per head.
$12549 ÷ $141 = 89, bought at one time.
$14523 ÷ $141 = 103, bought at another time.
89 + 103 = 192 in all, *Ans.*

2. G. C. D. of 90 gal., 138 gal. and 168 gal. is 6 gal., the capacity of the vessel.

3. G. C. D. of 225 ft. 300 ft., 195 ft. and 255 ft. is 15 ft., the length of the rail.

4. G. C. D. of 318 bu., 225 bu., 450 bu. and 291 bu. is 3 bu., the capacity of the largest bag.
1284 bu. (in all) ÷ 3 bu. = 428, the No. of bags.

5. G. C. D. of 208 ft. and 143 ft. is 13 ft., the length of the longest possible board to be used.
Twice 208 ft. + twice 143 ft. = 702 ft., entire distance around.
702 ft. ÷ 13 ft. = 54, the No. of boards once around.
$54 \times 5 = 270$, No. when 5 boards high, *Ans.*

Art. 307.

1. L. C. M. of 8 yds., 10 yds. and 12 yds. = 120 yds., *Ans.*

2. L. C. M. of \$36, \$15 and \$48 = \$720.
\$720 ÷ \$36 = 20, the No. of cows.
" " \$15 = 48, " " hogs.
" " \$48 = 15, " " oxen.

3. L. C. M. of 14 da., 21 da. and 35 da. = 210 days, *Ans.*

4. L. C. M. of 12, 15, 24 and 32 = 480, the No. of acres in farm.

5. L. C. M. of 132 in. and 154 in. = 924 inches, *Ans.*

6. L. C. M. of \$75, \$125 and \$175 = \$2625, *Ans.*

7. L. C. M. of 24, 40 and 64 = 960, the No. of days required.

Art. 342.

6. James, $9\frac{11}{16}$ bu.
Henry, { $9\frac{11}{16}$ "
$2\frac{3}{4}$ "
Louis, { $9\frac{11}{16}$ "
$2\frac{3}{4}$ "
$5\frac{3}{8}$ "
$39\frac{15}{16}$ bu., *Ans.*

7. 1st, $368\frac{3}{4}$ bu.
2d, { $368\frac{3}{4}$ "
$84\frac{1}{2}$ "
3d, { $368\frac{3}{4}$ "
$49\frac{7}{8}$ "
$1240\frac{5}{8}$ bu., *Ans.*

11. 1st, $85\frac{11}{16}$ acres.
2d, { $85\frac{11}{16}$ "
$18\frac{7}{10}$ "
3d, { $85\frac{11}{16}$ "
$18\frac{7}{10}$ "
$5\frac{3}{4}$ "
Left, $397\frac{1}{2}$ "
In all, $697\frac{57}{80}$ acres.

12. Sold, { $5\frac{1}{2}$ gal.
$15\frac{5}{8}$ "
$7\frac{1}{4}$ "
Left, $35\frac{3}{8}$ "
In all, $63\frac{3}{4}$ gal.

Art. 348.

1. $24-(9\frac{13}{15}+2\frac{7}{12}+4\frac{9}{10})=6\frac{13}{20}$, the No. hrs. spent in sleep.

2. $86\frac{7}{8}$ lb. $-19\frac{1}{2}$ lb. $=67\frac{3}{8}$ lb. sold in all ;
$67\frac{3}{8}$ lb. $-(15\frac{15}{16}$ lb. $+23\frac{3}{4}$ lb.$)=27\frac{11}{16}$ lb. sold the third time.

4. $347\frac{5}{12}$ mi. $+371\frac{7}{10}$ mi. $=719\frac{7}{60}$ mi. ;
952 mi. $-719\frac{7}{60}$ mi. $=232\frac{53}{60}$ mi., *Ans.*

5. $\$1000-\$635\frac{4}{5}=\$364\frac{1}{5}$, first ;
$\$987\frac{3}{4}-\$364\frac{1}{5}=\$623\frac{11}{20}$, second.

6. $\$8375\frac{3}{4}-\$1986\frac{4}{5}=\$6388\frac{19}{20}$, cost.

7.

$$\begin{array}{r}\$18765\frac{1}{2}\\ 1246\frac{3}{4}\\ \underline{27932\frac{4}{5}}\\ \$47945\frac{1}{20}\text{, cost.}\end{array}\qquad\begin{array}{r}\$15938\frac{17}{20}\\ \underline{40985\frac{1}{4}}\\ \$56924\frac{2}{20}\text{, rec'd.}\\ \underline{47945\frac{1}{20}}\\ \$8979\frac{1}{20}\text{, gain.}\end{array}$$

Art. 356.

1. $\$1\frac{3}{5}\times568\frac{3}{4}=\$910$, rec'd ; $\$910\div3=\$303\frac{1}{3}$ each share.

3. $7\frac{4}{9}$ yds. $\times8=59\frac{5}{9}$ yds. in suits ;
$59\frac{5}{9}$ yds. $+11\frac{17}{18}$ yds. $=71\frac{1}{2}$ yds., *Ans.*

4. $\frac{3}{4}$ of $\$9500=\$7125$, insurance ;
$\frac{7}{8}$ of $\$7125=\$6234\frac{3}{8}$, am't rec'd ;
$\$9500-\$6234\frac{3}{8}=\$3265\frac{5}{8}$, loss.

5. $\frac{9}{9}$ or entire sum $-\frac{7}{9}$ spent $=\frac{2}{9}$ remaining ;
$\frac{2}{9}$ of $\$16\frac{1}{5}=\frac{2}{9}$ of $\$\frac{81}{5}=\$\frac{18}{5}=\$3\frac{3}{5}$, *Ans.*

6. 9 loads taken $+\frac{3}{4}$ load remaining $=9\frac{3}{4}$ loads in all ;
$27\frac{3}{4}$ bu. $\times9\frac{3}{4}=\frac{111}{4}\times\frac{39}{4}=270\frac{9}{16}$ bu. in all.

9. $\frac{5}{5}$ or entire claim $-\frac{4}{5}$ paid $=\frac{1}{5}$ lost ;
$\frac{1}{5}$ of $\$3785\frac{3}{4}=\$757\frac{3}{20}$, lost.

12. $\$4\frac{17}{20}\times18=\$87\frac{3}{10}$, cost of sheep ;
$\$100-\$87\frac{3}{10}=\$12\frac{7}{10}$, cost of hog.

14. 16 eggs for 25¢ $=\frac{25}{16}$¢ apiece, 9 eggs for 25¢ $=\frac{25}{9}$¢ apiece ;
$\frac{25}{9}$¢ $-\frac{25}{16}$¢ $=\frac{175}{144}$¢, gain on each egg ;
$\frac{175}{144}$¢ $\times12\times36=525$¢ $=\$5.25$, gain on all.

15. $41\frac{7}{8}$ lb. × 48 = 2010 lb. in all;
$43\frac{3}{4}$¢ − $31\frac{1}{4}$¢ = $12\frac{1}{2}$¢ gain on 1 lb.;
$12\frac{1}{2}$¢ × 2010 = \$$\frac{1}{8}$ × 2010 = \$$251\frac{1}{4}$ gain.

16. Jan. 1 to Jan. 30 = 29 days;
$5\frac{3}{4}$ min. × 29 = $166\frac{3}{4}$ min. gain = 2 hrs. $46\frac{3}{4}$ min. after noon.

17.
$\frac{3}{5}$ of 700 = 420 @ \$$16\frac{2}{5}$ = \$6888
$\frac{3}{4}$ of 280 = 210 @ \$$10\frac{1}{2}$ = 2205
700 − 630 = 70 @ \$$14\frac{3}{5}$ = 1022
\$10115, selling price.
700 @ \$$12\frac{19}{20}$ = 9065, cost.
\$1050, gain.

19.
$4\frac{3}{8}$ mi. × $6\frac{7}{12}$ = $28\frac{77}{96}$ mi. A travels.
$3\frac{4}{5}$ " × " = $25\frac{1}{60}$ " B "
$53\frac{131}{160}$ mi., *Ans.*

20. \$$98\frac{3}{4}$ × $71\frac{2}{5}$ = \$$7050\frac{3}{4}$, value of farm;
$\frac{3}{7}$ of \$$7050\frac{3}{4}$ = \$$3021\frac{3}{4}$, *Ans.*

Art. 370.

1. $9\frac{1}{3}$ bbl. ÷ 7 = $\frac{28}{3} \times \frac{1}{7} = \frac{4}{3}$ = $1\frac{1}{3}$ bbl. to a family;
$\frac{4}{3}$ bbl. ÷ 5 = $\frac{4}{3} \times \frac{1}{5} = \frac{4}{15}$ bbl. to a person.

2. $\frac{7}{8}$ lb. × 2137 = $\frac{14959}{8}$ lb. consumed daily;
29918 lb. ÷ $\frac{14959}{8}$ lb. = 16, the No. of days.

3. $\frac{8}{8}$ earned − $\frac{5}{8}$ spent = $\frac{3}{8}$ saved daily; hence, $\frac{1}{8}$ day's wages is saved in $\frac{1}{3}$ of a day, and $\frac{8}{8}$ or a whole day's wages in $\frac{8}{3}$ days; to save $5\frac{3}{4}$ days' wages will take $5\frac{3}{4}$ times $\frac{8}{3}$ days = $\frac{23}{4} \times \frac{8}{3}$ = $15\frac{1}{3}$ days.

4. \$$246\frac{3}{8}$ ÷ \$$1\frac{1}{8}$ = 219, No. bu. sold 2d time.
$235\frac{3}{4}$ + 219 = $454\frac{3}{4}$, No. bu. at first.

5. $\frac{3}{3}$ or all − $\frac{2}{3}$ to wife = $\frac{1}{3}$ remainder; $\frac{4}{5}$ of $\frac{1}{3}$ = $\frac{4}{15}$ to son;
$\frac{1}{5}$ of $\frac{1}{3}$ = $\frac{1}{15}$ to daughter;
$\frac{2}{3}$ or wife's share − $\frac{4}{15}$ or son's share = $\frac{2}{5}$ = \$$9875\frac{7}{10}$;
$\frac{1}{5}$ = $\frac{1}{2}$ of \$$9875\frac{7}{10}$ = \$$4937\frac{17}{20}$, and
$\frac{5}{5}$ or whole estate = \$$4937\frac{17}{20}$ × 5 = \$$24689\frac{1}{4}$;
$\frac{2}{3}$ of \$$24689\frac{1}{4}$ = \$$16459\frac{1}{2}$ to wife;
$\frac{4}{15}$ " " = \$$6583\frac{4}{5}$ to son;
$\frac{1}{15}$ " " = \$$1645\frac{19}{20}$ to daughter.

6. $\frac{5}{5}$ or all $-$ $\frac{2}{5}$ spent $=$ $\frac{3}{5}$ left; $\frac{3}{8}$ of $\frac{3}{5} = \frac{9}{40} =$ \$36;
$\frac{1}{40} = \frac{1}{9}$ of \$36 $=$ \$4, and $\frac{40}{40}$ or all $=$ \$4 $\times$ 40 $=$ \$160, at first.

7. \$$38\frac{2}{5} \div$ \$$1\frac{1}{3} = \frac{144}{5}$, the No. yds. \$$1\frac{4}{5} \times \frac{144}{5} =$ \$51.84, *Ans.*

8. $\frac{2}{3}$ of $\frac{3}{4}$ bu. $= \frac{1}{2}$ bu. sold for cost of all;
$\frac{3}{4}$ bu. $-$ $\frac{1}{2}$ bu. $= \frac{1}{4}$ bu. sold at cost for \$$1\frac{1}{4}$.
$\frac{4}{4}$ or bushel $=$ \$$1\frac{1}{4} \times 4 =$ \$5, *Ans.*

9. $2\frac{3}{4}$ cords $\div 8\frac{1}{4} = \frac{1}{3}$ cord, A can do in 1 hr.,
$2\frac{2}{3}$ " $\div 6\frac{2}{5} = \frac{5}{12}$ " B " " "
($\frac{1}{3}$ cord $+ \frac{5}{12}$ cord) $\times$ 12 $=$ 9 cords, both can do in 12 hrs.

10. $\frac{5}{5}$ or all $-$ $\frac{2}{5}$ for overcoat $= \frac{3}{5}$ remainder; $\frac{4}{5}$ of $\frac{3}{5} = \frac{12}{25}$ for suit;
$\frac{12}{25} - \frac{2}{5} = \frac{2}{25}$ difference $=$ \$$7\frac{1}{2}$; $\frac{1}{25} = \frac{1}{2}$ of \$$7\frac{1}{2} =$ \$$3\frac{3}{4}$, and
$\frac{25}{25}$ or whole amount $=$ \$$3\frac{3}{4} \times 25 =$ \$$93\frac{3}{4}$, *Ans.*

11. In 1 hr. Anna can make $\dfrac{1}{8\frac{2}{3}}$ or $\frac{3}{26}$ of the dress.
" " Susan " " $\dfrac{1}{9\frac{3}{4}}$ " $\frac{4}{39}$ " " "
" " both " " $\frac{3}{26} + \frac{4}{39} = \frac{17}{78}$ of the dress.
$\frac{17}{78}$ in 1 hr. $= \frac{1}{78}$ in $\frac{1}{17}$ hr., and 78 times $\frac{1}{17}$, or the whole, in $\frac{78}{17}$ hrs
$= 4\frac{10}{17}$ hours, *Ans.*

12. \$$15\frac{4}{5} +$ \$$5\frac{1}{2} +$ \$$6\frac{3}{4} =$ \$$28\frac{1}{20}$ spent; $\frac{5}{8}$ remaining makes $\frac{3}{8}$ spent;
$\frac{3}{8} =$ \$$28\frac{1}{20}$; $\frac{1}{8} = \frac{1}{3}$ of \$$28\frac{1}{20} =$ \$$9\frac{7}{20}$, and
$\frac{8}{8} =$ \$$9\frac{7}{20} \times 8 =$ \$$74\frac{4}{5}$, at first.

13. \$$184\frac{1}{4} \div 9\frac{4}{7} =$ \$$19\frac{1}{4}$ paid per week;
\$$19\frac{1}{4} -$ \$$10\frac{1}{2} =$ \$$8\frac{3}{4}$ for daughter.

14. $\frac{3}{4}$ of butcher's bill $=$ grocer's bill.
$\frac{3}{4}$ of butcher's bill $+ \frac{4}{4}$ of butcher's bill $= \frac{7}{4}$ of butcher's bill
$=$ sum of both.
$\frac{7}{4}$ butcher's bill $=$ \$36.40. $\frac{1}{4}$ butcher's bill $=$ \$5.20.
$\frac{4}{4}$ " " $=$ \$20.80 $=$ butcher's bill.
$\frac{3}{4}$ " " $=$ \$15.60 $=$ grocer's bill.

15. $\frac{2}{5}$ of $462\frac{1}{2}$ bu. $=$ 185 bu.; 185 bu. $+$ 160 bu. $=$ 345 bu., *Ans.*

16. $3\frac{1}{6}$ hrs. $+ 5\frac{1}{2}$ hrs. $= 8\frac{2}{3}$ hrs. to drive;
$82\frac{1}{3}$ mi. $\div 8\frac{2}{3} = 9\frac{1}{2}$ mi. per hour.

17. $7\frac{3}{4}$ yds. $+$ ($7\frac{3}{4}$ yds. $- \frac{7}{8}$ yd.) $= 14\frac{5}{8}$ yds.; $\frac{13}{32} = 14\frac{5}{8}$ yds.;
$\frac{1}{32} = \frac{1}{13}$ of $14\frac{5}{8}$ yds. $= \frac{9}{8}$ yds.; and
$\frac{32}{32} = \frac{9}{8}$ yds. $\times$ 32 $=$ 36 yds. in piece.

18. \$5385, first.

$\left.\begin{array}{r}1275\\ \underline{5385}\end{array}\right\}$ second.

\$12045 = $\frac{3}{5}$ of price of farm;

$\frac{5}{5}-\frac{3}{5}=\frac{2}{5}$ = part paid by third; $\frac{1}{5}$ = \$4015, $\frac{2}{5}$ = \$8030, *Ans.*

19. \$$21\frac{3}{8}\div4\frac{3}{4}$ = \$$\frac{9}{2}$, cost of 1 ton; \$$\frac{9}{2}\times3\frac{3}{10}$ = \$$14\frac{17}{20}$, *Ans.*

20. $\frac{5}{5}-\frac{2}{5}$ lost = $\frac{3}{5}$ remaining; $\frac{3}{4}$ of $\frac{2}{5}=\frac{3}{10}$ gained;
$\frac{3}{5}+\frac{3}{10}=\frac{9}{10}$ = \$8154 on hand;
$\frac{1}{10}=\frac{1}{9}$ of \$8154 = \$906, and $\frac{10}{10}$ = \$906 × 10 = \$9060, at first.

21. Buildings = $\frac{3}{7}$ value of land; $\frac{7}{7}-\frac{3}{7}=\frac{4}{7}$ value of land = \$4784;
$\frac{1}{7}$ value of land = \$1196;
$\frac{7}{7}+\frac{3}{7}=\frac{10}{7}$ value of land or value of both = \$11960, *Ans.*

22. \$$123\frac{1}{5}\times143\frac{5}{8}$ = \$$\frac{88473}{5}$; \$$\frac{88473}{5}\div229\frac{4}{5}$ = \$77, *Ans.*

23. $\frac{4}{4}$ or B's work + $\frac{3}{4}$ B's work or A's work = $\frac{7}{4}$ B's work or both
= \$2450;
$\frac{1}{4}$ B's work = $\frac{1}{7}$ of \$2450 = \$350;
$\frac{4}{4}$ or B's work = \$1400, $\frac{3}{4}$ or A's work = \$1050, *Ans.*

24. 3 da. of boy = 2 da. of man, 1 da. of boy = $\frac{2}{3}$ da. of man,
24 " " = 24 times $\frac{2}{3}$ da. = 16 da. of man, *Ans.*

25. 40 bu. require $\frac{5}{8}$ acre. 1 bu. requires $\frac{1}{40}$ of $\frac{5}{8}$ acres = $\frac{1}{64}$ acre,
248 " " 248 times $\frac{1}{64}$ acre = $3\frac{7}{8}$ acres, *Ans.*

26. $\frac{1}{4}$ paid leaves $\frac{3}{4}$ remaining; ($\frac{2}{3}$ of $\frac{3}{4}$) or $\frac{1}{2}+\frac{1}{4}=\frac{3}{4}$ = \$9600;
$\frac{1}{4}=\frac{1}{3}$ of \$9600 = \$3200; All or $\frac{4}{4}$ = \$3200 × 4 = \$12800, *Ans.*

27. $\frac{2}{5}-\frac{3}{8}=\frac{1}{40}$ = \$60; $\frac{40}{40}$ or entire salary = \$60 × 40 = \$2400, *Ans.*

28. $\frac{8}{8}$ or previous wages + $\frac{1}{8}=\frac{9}{8}$ = \$4842.45;
$\frac{1}{8}=\frac{1}{9}$ of \$4842.45 = \$538.05,
and $\frac{8}{8}$ = \$538.05 × 8 = \$4304.40, or previous wages.

29. $\frac{3}{4}-\frac{3}{5}=\frac{3}{20}$ = \$690; $\frac{1}{20}=\frac{1}{3}$ of \$690 = \$230, and
$\frac{20}{20}$ or entire farm = \$230 × 20 = \$4600, *Ans.*

30. $\frac{2}{3}$ A's rate = B's rate = $2\frac{1}{2}$ mi. per hour,
$\frac{1}{3}$ " " = $\frac{1}{2}$ of $2\frac{1}{2}$ mi. = $1\frac{1}{4}$ mi. per hour.
$\frac{3}{3}$ or A's rate = $1\frac{1}{4}$ mi. × 3 = $3\frac{3}{4}$ mi. per hour.
$3\frac{3}{4}$ mi. per hour × $14\frac{4}{5}$ = $55\frac{1}{2}$ mi., the distance.

Art. 371.

1. $\frac{3}{5}$ or first payment — ($\frac{3}{4}$ of $\frac{2}{5}$) or second payment = $\frac{3}{10}$ = \$195.60;
$\frac{1}{10}$ = $\frac{1}{3}$ of \$195.60 = \$65.20, and
$\frac{10}{10}$ or entire debt = \$65.20 × 10 = \$652, *Ans.*

2. $\frac{2}{3}$ of 480$\frac{3}{4}$ bu. = 320$\frac{1}{2}$ bu.

$$\left.\begin{array}{r} \$1\frac{1}{8} \times 320\frac{1}{2} = \$360\frac{9}{16} \\ \$\frac{3}{4} \times 160\frac{1}{4} = \underline{\quad 120\frac{3}{16}} \\ \$480\frac{3}{4} \end{array}\right\} \text{selling price.}$$

$$\begin{array}{r} \$\frac{7}{8} \times 480\frac{3}{4} = \underline{\quad 420\frac{21}{32}}, \text{ cost.} \\ \$60\frac{3}{32}, \text{ gain.} \end{array}$$

3. $\frac{1}{4}$ of selling price = gain = \$6806.25, and
$\frac{3}{4}$ " " " , or cost = \$20418.75.
\$20418.75 ÷ 297 = \$68.75, cost per head.

4. 1 bu. = \$7$\frac{3}{4}$ ÷ 9$\frac{1}{2}$ = \$$\frac{31}{38}$; \$$\frac{31}{38}$ × 950 = \$775, *Ans.*

6. $\frac{8}{8}$ or one share + $\frac{7}{8}$ or other share = $\frac{15}{8}$ or both = \$60000;
$\frac{1}{8}$ = $\frac{1}{15}$ of \$60000 = \$4000;
$\frac{8}{8}$ = \$32000, one share, $\frac{7}{8}$ = \$28000, other share.

7. \$8$\frac{7}{8}$ × 36 = \$319$\frac{1}{2}$, value of flour,
\$319$\frac{1}{2}$ ÷ \$$\frac{3}{8}$ = 852, the No. of bu.

8. $\frac{7}{7}$ or all — $\frac{2}{7}$ lost = $\frac{5}{7}$ remaining; $\frac{3}{5}$ of $\frac{5}{7}$ = $\frac{3}{7}$ gained;
$\frac{5}{7}$ + $\frac{3}{7}$ = $\frac{8}{7}$ = \$24000;
$\frac{1}{7}$ = $\frac{1}{8}$ of \$24000 = \$3000, and $\frac{7}{7}$ = \$21000, *Ans.*

9. \$$\frac{7}{8}$ × 92 = \$$\frac{644}{8}$, value of corn; \$$\frac{644}{8}$ ÷ \$2$\frac{7}{8}$ = 28, No. of yds.

10. $\frac{5}{7}$ — $\frac{3}{5}$ = $\frac{4}{35}$ = 160; $\frac{1}{35}$ = $\frac{1}{4}$ of 160 = 40, and
$\frac{35}{35}$ or the No. = 35 × 40 = 1400, *Ans.*

11. If 7 eggs cost \$$\frac{1}{4}$, 1 egg costs \$$\frac{1}{28}$, and
14 doz. eggs cost \$$\frac{1}{28}$ × 14 × 12 = \$6, *Ans.*

12. 5 apples for 3¢ = $\frac{3}{5}$¢ each; 4 apples for 5¢ = $\frac{5}{4}$¢ each;
$\frac{5}{4}$¢ — $\frac{3}{5}$¢ = $\frac{13}{20}$¢ gain on each apple;
\$1.69 ÷ $\frac{13}{20}$¢ = 260, the No. of apples sold.

13. $\frac{3}{3}$ or price of horse + $\frac{2}{3}$ price of horse = $\frac{5}{3}$ price of horse or price of both = \$340;
$\frac{1}{3}$ = $\frac{1}{5}$ of \$340 = \$68; $\frac{3}{3}$ or price of horse = \$204,
$\frac{2}{3}$ or price of sleigh = \$136, *Ans.*

14. $\frac{5}{9}$ or share of one + $\frac{4}{9}$ or share of other $= \frac{9}{9} =$ shares of both $= 286$ acres ;
$\frac{1}{9} = \frac{1}{9}$ of 286 acres $= 31\frac{7}{9}$ acres ;
$\frac{5}{9}$ or one's share $= 158\frac{8}{9}$ acres, $\frac{4}{9}$ or other's share $= 127\frac{1}{9}$ acres.

15. $\$\frac{2}{3} \times 3\frac{3}{4} = \$\frac{5}{2}$ earned each day ;
$\$100 \div \$\frac{5}{2} = 40$, the No. of days required.

16. $\$\frac{3}{4} \times 42\frac{3}{4} = \$\frac{513}{16} = \$32\frac{1}{16}$, cost ;
$42\frac{3}{4}$ gal. $-$ ($\frac{1}{9}$ of $42\frac{3}{4}$ gal.) $= 38$ gal. left ;
$\$1.15 \times 38 = \$43.70$, selling price,
$\$43.70 - \$32.06\frac{1}{4} = \$11.63\frac{3}{4}$, gain.

17. $\$3\frac{4}{5} - \$2\frac{7}{8} = \$\frac{37}{40}$ gain on 1 bbl. ;
$\$111 \div \$\frac{37}{40} = 120$, the No. of bbl. required.

18. $\frac{3}{4}$ of $\frac{3}{5} = \frac{9}{20}$; $\frac{2}{5} + \frac{9}{20} = \frac{17}{20}$ of debt $= \$431\frac{3}{8}$;
$\frac{1}{20} = \frac{1}{17}$ of $\$431\frac{3}{8} = \$\frac{203}{8}$,
$\frac{20}{20}$ or entire debt $= \$\frac{203}{8} \times 20 = \$507\frac{1}{2}$, *Ans.*

20. $14\frac{2}{5}$ days $\times 5 = 72$ days, the time in which 1 man will do the work. To do it in 12 days will take as many men as 12 is contained in 72, or 6 men.

21. $\$106\frac{1}{2} - \$4\frac{1}{2} = \$102$, cost of all ;
$\$102 \div 12 = \$8\frac{1}{2}$, cost per bbl.

22. A and B together would receive \$7 as often as \$7 is contained in \$9520 or 1360 times ;
A, \$3 each time $= \$3 \times 1360 = \$4080$, A,
B, \$4 " " $= \$4 \times 1360 = \$5440$, B.

23. In 1 day A can do $\dfrac{1}{8\frac{3}{4}}$ part of the work, or $\frac{4}{35}$ of it ;
in $5\frac{3}{4}$ days he can do $5\frac{3}{4}$ times $\frac{4}{35} = \frac{23}{35}$ of it, *Ans.*

24. In 1 day A can do $\dfrac{1}{15\frac{3}{4}} = \frac{4}{63}$ of the work ;
" " B " $\dfrac{1}{16\frac{4}{5}} = \frac{5}{84}$ " "
" " both " $\frac{4}{63} + \frac{5}{84} = \frac{31}{252}$ of the work ;
$\frac{31}{252}$ in 1 day $= \frac{1}{252}$ in $\frac{1}{31}$ da., and
252 times $\frac{1}{31}$, or the whole, in $\frac{252}{31}$ da. $= 8\frac{4}{31}$ da., *Ans.*

25. $\$15\frac{3}{4} \div 60 = \$\frac{21}{80}$ per hour; $\$\frac{21}{80} \times 48 = \$12\frac{3}{5}$, *Ans.*

26. $\$2665 \div \frac{65}{100} = \$4100$, *Ans.*

27. $\frac{1}{5} - \frac{1}{8} = \frac{3}{40}$, part B can do in 1 day;
$\frac{1}{40}$ in $\frac{1}{3}$ of a day, and $\frac{40}{40}$ or all in $40 \times \frac{1}{3} = 13\frac{1}{3}$ days, *Ans.*

28. $\$121 \div 5\frac{1}{2} = \$22$ per month; $\$22 \times 3\frac{3}{5} = \$79\frac{1}{5}$, *Ans.*

29. Son earns $\frac{3}{5}$ as much as father;
$\frac{5}{5}$, father + $\frac{3}{5}$, son = $\frac{8}{5}$, both = \$103;
$\frac{1}{5} = \$\frac{103}{8}$, and $\frac{5}{5} = \$\frac{103}{8} \times 5 = \$64\frac{3}{8}$, father's share;
$\frac{3}{5} = \$\frac{103}{8} \times 3 = \$38\frac{5}{8}$, son's share.

30. $\frac{20}{20} - \frac{13}{20} = \frac{7}{20}$ belonging to grammar dep't = 588 pupils.
$\frac{1}{20} = \frac{1}{7}$ of 588 pupils = 84 pupils,
$\frac{20}{20}$ or entire school = 20 times 84 pupils = 1680 pupils.

31. 8 lb. 12 oz. = $8\frac{3}{4}$ lb. $\$1\frac{3}{4} \div 8\frac{3}{4} = \$\frac{1}{5}$ = 20 cents, *Ans.*

32. $\frac{3}{5}$ of $\frac{2}{7} = \frac{6}{35} = \$8400$; $\frac{1}{35} = \frac{1}{6}$ of $\$8400 = \$1400$;
$\frac{35}{35}$ or entire mill $= \$1400 \times 35 = \$49000$, *Ans.*

33. $\frac{5}{9}$ of $\frac{3}{5} = \frac{1}{3}$; $\frac{2}{5} - \frac{1}{3} = \frac{1}{15} = \$5\frac{1}{4}$;
$\frac{15}{15}$ or amount at first $= \$5\frac{1}{4} \times 15 = \$78\frac{3}{4}$, *Ans.*

34. $\$2\frac{8}{10} \times 2\frac{3}{4} = \$\frac{77}{10}$, cost of making suit;
$\$\frac{77}{10} \div 3\frac{2}{3} = \$2\frac{1}{10} = \$2.10$ per day.

35. 1 ton will last 1 horse 8 days × 5 = 40 days;
$3\frac{3}{8}$ tons will last 1 horse 40 days $\times 3\frac{3}{8}$ = 135 days; and
9 horses $\frac{1}{9}$ as long = 15 days, *Ans.*

36. $\frac{13500}{20250} = \frac{2}{3}$ paid on each dollar; $\$1569 \times \frac{2}{3} = \$1046$, *Ans.*

37. $\frac{8}{9}$ of $3\frac{3}{4} = \frac{10}{3}$; $25\frac{4}{5} \div \frac{10}{3} = 7\frac{37}{50}$, *Ans.*

38. $\frac{2}{3}$ of first = $\frac{3}{4}$ of second, $\frac{1}{3}$ of first = $\frac{1}{2}$ of $\frac{3}{4}$ = $\frac{3}{8}$ of second,
$\frac{3}{3}$ or all of first $= \frac{3}{8} \times 3 = \frac{9}{8}$ of second.
$\frac{8}{8}$ or second + $\frac{9}{8}$ or first $= \frac{17}{8} = 100$; $\frac{1}{8} = \frac{1}{17}$ of $100 = \frac{100}{17}$;
$\frac{9}{8} = \frac{100}{17} \times 9 = 52\frac{16}{17}$, first, $\frac{8}{8} = \frac{100}{17} \times 8 = 47\frac{1}{17}$, second.

39. $\frac{2}{5} + \frac{9}{25} + \frac{1}{5} = \frac{24}{25}$ paid; $\frac{25}{25} - \frac{24}{25} = \frac{1}{25}$ unpaid = \$960;
$\frac{25}{25}$ or entire price $= \$960 \times 25 = \$24000$, *Ans.*

40. $\$28\frac{1}{2} \div (12\frac{2}{3} \times \frac{3}{4}) = \$3$, price of 1 sq. yd.;
$\$3 \times (42\frac{2}{3} \times 1\frac{1}{4}) = \$160$, *Ans.*

41. In 1 hr. Mary can make $\frac{1}{18\frac{2}{3}} = \frac{3}{56}$ of it,
" " both " " $\frac{1}{11\frac{1}{5}} = \frac{5}{56}$ "
" " Kate " " $\frac{5}{56} - \frac{3}{56} = \frac{2}{56}$ "
$\frac{2}{56}$ or $\frac{1}{28}$ in 1 hr.; $\frac{28}{28}$ or all in 28 hrs., *Ans.*

42. $\frac{15}{12}$¢ = price paid for each egg, $\frac{25}{8}$¢ = price rec'd for each egg
$\frac{25}{8}$¢ − $\frac{15}{12}$¢ = $\frac{45}{24}$¢ gain on each egg,
1350¢ ÷ $\frac{45}{24}$¢ = 720 = 60 doz., the No. of eggs.

43. 4 men, or 7 boys, can earn \$2.80 × 4 = \$11.20 in a day;
1 boy can earn $\frac{1}{7}$ of \$11.20 = \$1.60 per day.

44. 15 hrs. 40 min. = $15\frac{40}{60}$ hrs. = $15\frac{2}{3}$ hrs.
$52\frac{7}{8}$ mi. ÷ $15\frac{2}{3}$ = $3\frac{3}{8}$ mi. per hour.

45. \$$36\frac{3}{4}$ ÷ $43\frac{3}{4}$ = \$$\frac{21}{25}$, cost per gal., \$$\frac{21}{25} \times \frac{507}{4}$ = \$106.47, *Ans.*

46. $28\frac{4}{5} \div (\frac{1}{7}$ of $\frac{2}{3}$ of $1\frac{4}{5}) = 168$, *Ans.*

47. $\frac{6}{19}$ left = 192 bushels; $\frac{1}{19} = \frac{1}{6}$ of 192 bu. = 32 bu.,
and $\frac{19}{19}$ or all = 32 bu. × 19 = 608 bu., *Ans.*

48. \$1.45 + \$1.08 + \$.83 = \$3.36, the value of 3 bu.,
and $\frac{1}{3}$ of \$3.36 = \$1.12, the value of 1 bu. of the lot;
\$6073.20 ÷ \$1.12 = $5422\frac{1}{2}$, the No. bush. in all.

49. \$$23\frac{3}{4}$ − \$$18\frac{4}{5}$ = \$$4\frac{19}{20}$ saved weekly;
\$495 ÷ \$$4\frac{19}{20}$ = 100, the No. of weeks.

50. \$$121\frac{7}{8}$ ÷ $9\frac{3}{4}$ = \$$\frac{25}{2}$, cost of 1 ton;
\$175 ÷ \$$\frac{25}{2}$ = 14, the No. of tons.

51. $\frac{8}{8}$ or cost of buggy = $\frac{11}{8}$ or cost of horse,
$\frac{19}{8}$ " " both = \$570, $\frac{1}{8} = \frac{1}{19}$ of \$570 = \$30,
$\frac{8}{8}$ = \$240, cost of buggy, $\frac{11}{8}$ = \$330, cost of horse.

52. $\frac{2}{5} + (\frac{5}{7}$ of $\frac{3}{5}) = \frac{29}{35}$ in 1st and 2d fields,
$\frac{35}{35}$ or all $- \frac{29}{35} = \frac{6}{35}$ in 3d field = 180; $\frac{1}{35} = \frac{1}{6}$ of 180 = 30,
and $\frac{35}{35}$ = 30 × 35 = 1050 in all.

53. 45¢ a half-peck = 45¢ × 8 = \$3.60 = \$$3\frac{3}{5}$ per bu.;
\$$3\frac{3}{5}$ − \$$2\frac{3}{4}$ = \$$\frac{17}{20}$ gain per bushel;
\$$\frac{17}{20} \times 96 \times 1\frac{3}{4}$ = \$$142\frac{4}{5}$ gain on all.

a dozen ; 1/3 per hundred ; 8/ per thousand.

Carmel of Lisieux (Calvados), France.

PRAYER

For the Beatification of the Servant of God

Sister Teresa of the Child Jesus and of the Holy Face

"The Little Flower of Jesus"

who died in the odour of sanctity
at the Carmel of Lisieux
on 30th. September 1897, aged 24.

O JESUS, Who to confound our pride didst will to be born a little child, and Who later didst speak those words sublime : " *Unless ye become as little children, ye shall not enter the Kingdom of Heaven* ", vouchsafe to hear our humble prayer on behalf of her who so perfectly lived that life of spiritual childhood and who has so persuasively recalled to us its ways.

Sweet Babe of Bethlehem, by the winning charms of Thy Divine Infancy ; Adorable Face of Jesus, by the humiliations of Thy Passion, we beseech Thee, if it be for the glory of God and for the sanctification of souls, grant that the halo of the Blessed may soon adorn the chaste brow of Thy childlike spouse, TERESA OF THE CHILD JESUS AND OF THE HOLY FACE.

(100 days' indulgence)

Cardinal BOURNE,
Archbishop of Westminster. March 19, 1912

Petitions for novenas and acknowledgments of all favours granted may be sent to the Carmel of Lisieux (Calvados), France. Letters may be written in English.

Souvenirs of the Servant of God, and a brochure intitled : " Favours and cures obtained through the intercession of Sister Teresa of the Child Jesus " (price 6 d. postage extra) may be procured at the above address.

Price of this picture : 2 for 1/2 d. ; 2 1/2 d. a dozen ; 1/3 per hundred ; 8/ per thousand.

Carmel of Lisieux (Calvados), France.

selling price.

gain.

ll ;

, average cost.

work,

"

$\frac{1}{120}$ of the work.

1 hr. or 120 hours, *Ans.*

1 times,

me = 60$\frac{4}{5}$ A.

$\frac{15}{15}$ or farm = 30$\frac{2}{5}$ A. × 15 = 456 A.

14911\frac{1}{5}$, 1st sale.
7976$\frac{24}{25}$, 2d "
4605$\frac{3}{5}$, 3d "
27493\frac{19}{25}$, am't rec'd
19494, cost.
7999\frac{19}{25}$, gain.

3.

83.75 } 2d "
713.000
299.125
413.875, 3d "

, 1st day.
533.375, 2d "
413.875, 3d "
196.7815, still to go.
1323.6565, the No. miles in the voyage.

7.

265.325, first son,
227.71, second "
202.582, third "
800 − 695.617 = 104.383, No. of acres to fourth son.

Art. 403.

1. $147.63÷175.75 = $.84, price per bu.;
$.84 × 56.25 = $47.25, *Ans.*

4. 62.5 lb. × 11.445 = 715.3125 lb., weight of cu. ft. of lead;
91.56 T. = 2000 lb. × 91.56 = 183120 lb.;
183120 lb. ÷ 715.3125 = 256, the No. cu. ft.

5. 100 − (12.575 + 12.09 + 15.125) = 60.21, the No. miles traveled last three days;
60.21 mi. ÷ 3 = 20.07 mi., rate per day.

6. ($4.60 × 95.625) ÷ 125 = $3.519, *Ans.*

7. 150 ÷ 1.25 = 120, the No. of plots; $80.25 × 120 = $9630, *Ans.*

8. 1 − (.18 + .22 + .15) = .45 of salary saved = $900;
$\frac{1}{100} = \frac{1}{45}$ of $900 = $20, and the salary or $\frac{100}{100}$ = $2000, *Ans.*

13. 1 − (.22 + .0125 + .035) = .7325 left = 15236;
$\frac{1}{10000} = \frac{1}{7325}$ of 15236 = 2.08, and
$\frac{10000}{10000}$ or the army = 2.08 × 10000 = 20800, the No. of men at first.

Art. 416.

5. 14¢ − 8$\frac{3}{4}$¢ = 5$\frac{1}{4}$¢, gain on 1 lb.; $.05$\frac{1}{4}$ × 19793 = 1039.13\frac{1}{4}$, *Ans.*

6. 3825 mi. ÷ 25 mi. = 153, the No. of times the given amount is burned; 6595 lb. × 153 = 1009035 lb., *Ans.*

7. 868140 in. ÷ 30 in. = 28938, the No. of steps.

8. $.56 × 166581$\frac{1}{2}$ = $93285.64, *Ans.*

9. (60 rds. × 2) + (48 rds. × 2) = 216 rds. = 3564 ft. around pasture;
3564 ft. ÷ 12 ft. = 297, the No. of panels.

10. 60258 ft. ÷ 22 ft. = 2739, the No. of turns.

Art. 419.

6. 16170 ft. = 980 rds.; $1.25 × 980 = $1225, *Ans.*

7. 7680¢ ÷ 5¢ = 1536, the No. of half-pints = 768 pts. = 384 qts. = 12 bushels, *Ans.*

8. $9180 ÷ $.50 = 18360, the No. of yds. = 10 mi. 138 rds. 1 yd., *Ans.*

Art. 422.

1. .3125 mi. $= (.3125 \times 320)$ rds. $=$ 100 rds., *Ans.*

2. $\frac{15}{16}$ mi. $= (\frac{15}{16} \times 320)$ rds. $=$ 300 rds.;
800 rds. $= (300 \times 5\frac{1}{2})$ yds. $=$ 1650 yds.;
1650 yds. $= (1650 \times 3)$ ft. $=$ 4950 ft.

3. 5.875 bu. $= (5.875 \times 32)$ qts. $=$ 188 qts.;
17.75 bu. $= (17.75 \times 64)$ pts. $=$ 1136 pts.

4.

$$\begin{array}{r}
.8375 \text{ T.} \\
\underline{20\phantom{\text{ T.}}} \\
16.7500 \text{ cwt.} \\
\underline{100\phantom{\text{ cwt.}}} \\
75.0000 \text{ lb.}
\end{array}$$

16 cwt. 75 lb., *Ans.*

5. 7.75 long T. $= (7.75 \times 2240)$ lb. $=$ 17360 lb.;
17360 lb. $= (17360 \times 16)$ oz. $=$ 277760 oz., *Ans.*

6. 13.4375 mi. $= (13.4375 \times 5280)$ ft. $=$ 70950 ft.;
\$.035 $\times$ 70950 $=$ \$2483.25, *Ans.*

7. .46875 T. $= (.46875 \times 2000 \times 16)$ oz. $=$ 15000 oz.;
\$.62½ $\times \frac{15000}{12} =$ \$781.25, *Ans.*

Art. 425.

1.

$$\begin{array}{r}
20\,)\,\underline{16.8 \text{ T.}} \\
.84 \text{ T.}
\end{array}$$

.84 T., *Ans.*

2.

$$\begin{array}{r|l}
2 & \underline{1 \text{ pt.}} \\
8 & \underline{7.5 \text{ qt.}} \\
4 & \underline{2.9375 \text{ pk.}} \\
 & 7.734375 \text{ bu.}
\end{array}$$

\$14.85 ÷ 7.734375 $=$ \$1.92 per bu., *Ans.*

3.

$$\begin{array}{r|l}
4 & \underline{1 \text{ gi.}} \\
2 & \underline{1.25 \text{ pt.}} \\
4 & \underline{1.625 \text{ qt.}} \\
 & 17.40625 \text{ gal.}
\end{array}$$

\$.96 $\times$ 17.40625 $=$ \$16.71, *Ans*

4.

$$\begin{array}{r|l}
100 & \underline{75 \text{ lb.}} \\
20 & \underline{11.75 \text{ cwt.}} \\
 & .5875 \text{ T.}
\end{array}$$

\$4.80 $\times$ .5875 $=$ \$2.82, *Ans.*

5.

$$\begin{array}{r|l}
2 & \underline{1 \text{ pt.}} \\
8 & \underline{6.5 \text{ qt.}} \\
4 & \underline{3.8125 \text{ pk.}} \\
 & 5.953125 \text{ bu.}
\end{array}$$

\$15.24 ÷ 5.953125 $=$ \$2.56 per bu., *Ans.*

6. $\$4860 \times \frac{536}{320} = \$8140.50$, *Ans.*

7. $\$62.75 \times \dfrac{25.6}{320} = \$5.02$, *Ans.*

Art. 427.

5.

$$\begin{aligned} 75\tfrac{15625}{100000} &= 75\tfrac{75}{480} \\ 129\tfrac{7}{12} &= 129\tfrac{280}{480} \\ 169\tfrac{8}{15} &= 169\tfrac{256}{480} \\ 228\tfrac{17}{30} &= \underline{228\tfrac{272}{480}} \\ & \ 602\tfrac{403}{480}, \text{ No. of miles.} \end{aligned}$$

$\frac{403}{480}$ mi. $= (\frac{403}{480} \times 320)$ rds. $= 268\frac{2}{3}$ rds.;
$\frac{2}{3}$ rd. $= (\frac{2}{3} \times 16\frac{1}{2})$ ft. $= 11$ ft. 602 mi. 268 rds. 11 ft., *Ans.*

Art. 429.

5. $\frac{23}{44}$ mi. $= (\frac{23}{44} \times 320)$ rds. $= 167\frac{3}{11}$ rds.;
$\frac{3}{11}$ rds. $= (\frac{3}{11} \times 5\frac{1}{2})$ yds. $= 1\frac{1}{2}$ yds.; $\frac{1}{2}$ yd. $= 1\frac{1}{2}$ ft.; $\frac{1}{2}$ ft. $= 6$ in

rds.	yd.		ft.	in.
167	1		1	6
59	3		2	9
107	$2\frac{1}{2}$		1	9
	$\frac{1}{2}$	=	1	6
107	3		0	3

107 mi. 3 yd. 3 in., *Ans.*

Art. 436.

4. 518 mi. 96 rds. $=$ 165856 rds. $= (165856 \div 4)$ ch.
$= 41464$ ch. $= 4146400$ links, *Ans.*

8. .78525 mi. $= (.78525 \times 8000)$ l. $= 6282$ l., *Ans.*

9. $(975.75 \div 4)$ ch. $= 243.9375$ ch.;
$\left(\dfrac{70400 \div 5\frac{1}{2}}{4}\right)$ ch. $= 3200$ ch., *Ans.*

10. $(3565.85 \div 80)$ mi. $= 44.573125$ mi., *Ans.*

11. $(\frac{5}{8} \times 320 \times 25)$ l. $= 5000$ l. $= 50$ ch., *Ans.*

12. 5 mi. 17 rds. 5 yds. $= 26695.5$ ft. $= (26695.5 \div 66)$ ch.
$= 404.477272+$ ch. $= 40447.7272+$ l., *Ans.*

Art. 444.

7. 30 ft. by 24 ft. = 720 sq. ft. = 80 sq. yds.;
$1.15 × 80 = $92, *Ans.*

8. 32.5 rds. by 20.8 rds. = 676 sq. rds. = $\frac{676}{160}$ A.;
$90 × $\frac{676}{160}$ = 380\frac{1}{4}$, *Ans.*

9. (24 ft. by 12 ft.) × 2 = 576 sq. ft.
(18 " " ") × 2 = 432 "
1008 " = 112 sq. yds.
$.30 × 112 = $33.60, *Ans.*

10. 10¢ × (16 × 1$\frac{1}{2}$) = $2.40, *Ans.*

11. $.22$\frac{1}{2}$ × (20 × 1$\frac{1}{2}$) = $6.75, *Ans.*

12. 1 A. = 43560 sq. ft.; 25 ft. by 100 ft. = 2500 sq. ft.;
43560 ÷ 2500 = 17.424, the No. of lots.

13. 7.4 A. = (7.4 × 160) sq. rds. = 1184 sq. rds.
1184 ÷ 18.5 = 64, the No. of rds. in length.

15. 28.8 rds. by 20.25 rds. = 583.2 sq. rds. = 3.645 A., *Ans.*

16. 160 ÷ 4 = 40, the No. rds. in length.

18. 10.75 ch. by 5.96 ch. = 64.07 sq. ch. = 6.407 A., *Ans.*

19. 15 ch. by 12 ch. = 180 sq. ch. = 18 A.; $95 × 18 = $1710, *Ans.*

20. 5 ch. by 5 ch. = 25 sq. ch.;
1 sq. mile = (80 × 80) ch. = 6400 sq. ch.
$\frac{25}{6400} = \frac{5}{1280} = \frac{1}{256}$ sq. mi., *Ans.*

21. 23$\frac{5}{8}$ A. = 23.625 A.
(23.625 × 160 × 625) sq. l. = 2362500 sq. l., *Ans.*

23. 275$\frac{7}{8}$ A. = 275.875 A. = 2758.75 sq. ch.;
2758.75 ÷ 62.5 = 44.14, the No. of chains wide.

24. 4 A. = 40 sq. ch., making 20 lots;
$190 × 20 = $3800, selling price,
$275 × 4 = 1100, cost,
$2700, gain, *Ans.*

27. 837.5 m. by 108 m. = 90450 sq. m. = 904.5 ares = 9.045 Ha.;
2.471 A. × 9.045 = 22.350195 acres, *Ans.*

Art. 447.

4. $\left(\frac{100 \times 4 \times 6}{128}\right)$ cds. $=$ 18.75 cds.; $\$3.75 \times 18.75 = \$70.31\frac{1}{4}$, *Ans.*

7. 75 cds. $=$ (75×8) cd. ft. $=$ 600 cd. ft.;
$600 \div 6.25 = 96$, the No. of loads.

8. $(7.5 \times 7.5 \times 5.6)$ steres $=$ 315 steres $=$ 31.5 dekasteres.
35.3166 cu. ft. $\times$ 315 $=$ 11124.729 cu. ft., *Ans.*

11. $(2.5 \times 2.4 \times 1.6)$ cu. m. $=$ 9.6 cu. m.;
$168\frac{3}{4}$ lb. $\times (35.3166 \times 9.6) =$ 57212.892 lb., *Ans.*

Art. 450.

2. $3.785 \times 128 = 484.48+$, the No. of liters.

4. 25¢ $\times$ 127.5 $=$ \$31.875, *Ans.*

5. $\frac{(8\frac{1}{2} \times 4\frac{2}{3} \times 2\frac{1}{2} \times 1728) \text{ cu. in.}}{2150.42 \text{ cu. in.}} = 79.686+$, the No. of bushels.

6. $\$1\frac{1}{4} \times \frac{27 \times 1728}{2150.42} = \$27.12$, *Ans.*

Art. 454.

3. $\frac{3}{4}$ of 66090 $=$ $49567\frac{1}{2}$, the No. grains pure gold, *Ans.*

5. $(4032 \div 5760)$ lb. $=$ .7 lb., *Ans.*

8. 8784 dwt. $\div$ 183 dwt. $=$ 48, the No. rings.

9. 258000 gr. $\div$ 258 gr. $=$ 1000, the No. pieces.

10. 60¢ $\times$ $915\frac{3}{4}$ $=$ \$549.45, *Ans.*

11. $\frac{144 \times 7000}{5760} = 175$, the No. Troy lb.

12. $(25\frac{3}{4} \times 7000)$ gr. $=$ 180250 gr.;
180250 gr. Troy $=$ 31 lb. 3 oz. 10 dwt. 10 gr., *Ans.*

16. $(144 \times 16 \times 437.5)$ gr. $=$ 1008000 gr.;
1008000 gr. Apoth. $=$ 175 ℔, *Ans.*

17. $(7000 \div 60)$ dr. $=$ $116\frac{2}{3}$ dr.; $\$.15 \times 116\frac{2}{3} = \$17.50$;
$\$17.50 - \$6.50 = \$11$, gain.

18.

$$\begin{array}{r|l} 20 & 15 \text{ gr.} \\ \hline 3 & .75 \text{ ℈} \\ \hline 8 & 7.25 \text{ ʒ} \\ \hline 12 & 3.90625 \text{ ℥} \\ \hline & .3255208 \text{ ℔, } \textit{Ans.} \end{array}$$

19.

$$\begin{array}{r} \text{℔ } .875 \\ 12 \\ \hline \text{℥ } 10.500 \\ 8 \\ \hline \text{ʒ } 4.0 \\ \text{℥ } 10 \text{ ʒ } 4, \textit{ Ans.} \end{array}$$

20. (198 × 7000) ÷ 480 = 2887.5, No. of ℥,

$$\begin{array}{rcrl} \$.05 \times 2887.5 & = & \$144.375, & \text{receipts,} \\ \$.09\tfrac{1}{2} \times 198 & = & 18.81, & \text{cost,} \\ \cline{3-3} & & \$125.565, & \text{gain.} \end{array}$$

21. 7000 gr. = 350 ℈; $.25 × 350 = $87.50;
$87.50 − $50 = $37.50, gain.

22. $\dfrac{240 \text{ lb.} \times 7000}{5760} = \tfrac{7000}{24}$ ℔.; $\$70 \div \tfrac{7000}{24} = \$.24$, *Ans.*

23. (2.35 × 1.95 × .66) cu. m. = 3.02445 cu. m. = 3.02445 T.
= 3024.45 kilos, *Ans.*

24. (1.5 × 1.24 × .95) × 11.4 = 20.1438, the No. of kilos.

25. 12.875 kg. = 12875 g.; $.14 × 12875 = $1802.50, *Ans.*

26. $.08 × 1000 = $80, *Ans.*

$.05 × 2204.6 = $110.23, *Ans.*

Art. 455.

4. £$\tfrac{720}{960}$ = £$\tfrac{3}{4}$ = £.75, *Ans.* £$\tfrac{384}{960}$ = £$\tfrac{8}{20}$ = £.4, *Ans.*

5. 11s. 3d. = 135d. = £$\tfrac{135}{240}$ = £$\tfrac{9}{16}$, *Ans.*
3s. 4d. = 40d. = £$\tfrac{40}{240}$ = £$\tfrac{1}{6}$, *Ans.*

6. ($\tfrac{5}{6}$ × 20) s. = 16$\tfrac{2}{3}$s.; ($\tfrac{2}{3}$ × 12) d. = 8d.; 16s. 8d., *Ans.*
($\tfrac{3}{8}$ × 20) s. = 7$\tfrac{1}{2}$s. = 7s. 6d., *Ans.*
($\tfrac{11}{15}$ × 20) s. = 14$\tfrac{2}{3}$s. = 14s. 8d., *Ans.*

Art. 458.

4. To noon Monday = 220 min.;
to noon Sunday = 220 min. + (6 × 24 × 60) min. = 8860 min.
= 531600 sec. = 1063200 half-sec., *Ans.*

6. $(\frac{61}{73} \times 365)$ da. = 305 da., *Ans.*

7. $\frac{3}{4}$ of 365 da. = $273\frac{3}{4}$ da.; $273\frac{3}{4}$ da. − 270 da. = $3\frac{3}{4}$ da., *Ans.*

9.

$$\begin{array}{rrrr} & 5\text{ hr.} & 48\text{ min.} & 49.7\text{ sec.} \\ & & & 100 \\ \hline 24\text{ da.} & 5\text{ hr.} & 22\text{ min.} & 50\text{ sec., } \textit{Ans.} \end{array}$$

Art. 460.

4. $\frac{864000}{360 \times 60 \times 60}$ C. = $\frac{2}{3}$ C., *Ans.*

5. $\frac{1078272}{360 \times 60 \times 60}$ C. = $\frac{1078272}{1296000}$ C. = .832 C., *Ans.*

6. 7° 30′ = $7\frac{1}{2}$° each day; 360° ÷ $7\frac{1}{2}$° = 48, the No. of days.

8. $16\frac{1}{2}$ in. $\times \frac{360^\circ}{22.5^\circ}$ = 264 in. = 22 ft., *Ans.*

Art. 464.

1.

$$\begin{array}{rrrl} & 77^\circ & 0' & 15'' \\ & 74 & 3 & \\ \hline 15\,) & 2 & 57 & 15,\ \text{dif. in long.} \\ \hline & & 11 & 49,\ \text{`` `` time.} \end{array}$$

Noon or 12 hrs. − 11 min. 49 sec. = 11 hrs. 48 min. 11 sec., *Ans.*

2.

$$\begin{array}{rrl} 49\text{ min.} & 48\frac{14}{15}\text{ sec.} & \\ & 15 & \\ \hline 12^\circ & 27' & 14'',\ \textit{Ans.} \end{array}$$

3.

$$\begin{array}{rrrr} & 90^\circ & 15' & 15'' \\ & 30 & 19 & \\ \hline 15\,) & 120 & 34 & 15 \\ \hline \end{array}$$

8 hrs. 2 min. 17 sec., dif. in time,

9 hrs. − 8 hrs. 2 min. 17 sec. = 57 min. 43 sec. after midnight, *Ans.*

4.

$$\begin{array}{rrrl} 54\text{ min.} & & 19\frac{4}{5}\text{ sec.} & \\ & & 15 & \\ \hline 13^\circ & 34 & 57, & \text{dif. in long.} \\ 74 & 3 & & \\ \hline 87^\circ & 37' & 57'' & \text{W., } \textit{Ans.} \end{array}$$

5.

$$\begin{array}{rrrl} 8\text{ hr.} & 30\text{ min.} & & \\ 7 & 10 & 20\frac{1}{3} & \text{sec.} \\ \hline 1 & 19 & 39\frac{2}{3} & \\ & & 15 & \\ \hline 19^\circ & 54' & 55'', & \text{dif. in long.} \\ 75 & 10 & & \\ \hline 95^\circ & 4' & 55'' & \text{W., } \textit{Ans.} \end{array}$$

6.

$$\begin{array}{rrrr} & 90^\circ & 15' & 15'' \\ & 77 & 0 & 15 \\ \hline 15\,) & 13 & 15 & \\ \hline \end{array}$$

53 min., slow, *Ans*

7.

$$\begin{array}{rrrl} & 157^\circ & 50' & 36'' \\ & 122 & 26 & 15 \\ \hline 15\,) & 35 & 24 & 21,\ \text{dif. in long.} \\ \hline \end{array}$$

2 hrs. 21 min. $37\frac{2}{5}$ sec., dif. in time.

8.

$$\begin{array}{r} 2\text{ hrs. } 3'\ 36'' \\ 15 \\ \hline 30'\quad 54'',\ \text{dif. in long.} \end{array}$$

$74°\ 8' - 30°\ 54' = 43°\ 9'$ W., *Ans.*

Art. 465.

5.

$$\begin{array}{lcl} \$4.75 \times \dfrac{700 \times 28}{25} & = & \$3724,\ \text{receipts,} \\ \$3.50 \times 700 & = & \underline{2450},\ \text{cost,} \\ & & \$1274,\ \text{gain.} \end{array}$$

6. $144\text{ lb.} \times \frac{700}{576} = 175$ lb.;

$$\begin{array}{lcl} \$.20 \times 175 & = & \$35.00,\ \text{receipts,} \\ \$.09 \times 144 & = & \underline{12.96},\ \text{cost,} \\ & & \$22.04,\ \text{gain.} \end{array}$$

7. 24 rds. 5 yds. 1 ft. 6 in. = 4950 in.;
6336000 in. or 1 mile ÷ 4950 in. = 1280, *Ans.*

9. $\$75 \times \dfrac{176 \times 70}{160} = \$5775$, *Ans.*

10. $2 \times 26 + 2 \times 18 = 88$, No. of feet around room;

$$\begin{array}{lcl} \$.15 \times \dfrac{88 \times 9}{9} & = & \$13.20,\ \text{sides.} \\ \$.15 \times \dfrac{26 \times 18}{9} & = & \underline{7.80},\ \text{ceiling.} \\ & & \$21,\ \textit{Ans.} \end{array}$$

11. $\dfrac{\$1625}{25 \times 100} \times (172 \times 200) = \$22360$, *Ans.*

13. $\dfrac{14 \times 11 \times 9 \times 1728}{231} = 10368$, the No. of gal.

14. $14\frac{1}{4}$ gal. = 1320 gi.;
1320 gi. ÷ $2\frac{1}{2}$ gi. = 528, the No. of days.

15. $\dfrac{5 \times 10 \times 3\frac{7}{12} \times 1728}{2150.42} = 143.97$, the No. of bu.;
$\$1.20 \times 143.97 = \$172.764$, *Ans.*

16. $1\frac{1}{4}\text{ ft.} \times \dfrac{360°}{14.4°} = 31\frac{1}{4}$ ft. = 31 ft. 3 in., *Ans.*

17. 365 × 24 × 60 × 75 = 39420000, *Ans.*

18. 5 hrs. 40 min. or $\frac{17}{3}$ hrs. × 5 × 40 × 4 = $\frac{13600}{3}$ hrs. = 4533$\frac{1}{3}$ hrs.
= 188 da. 21 hrs. 20 min., *Ans.*

21. $\frac{11 \times 9 \times 6\frac{1}{4}}{24.75}$ = 25, the No. perch.; $75 × 25 = $1875, *Ans.*

22. 492 A. 146 rds. = 492.9125 acres;
$68.80 × 492.9125 = $33912.38, *Ans.*

23. 17¢ × 1$\frac{3}{4}$ = $\frac{119}{4}$¢ per sq. ft.; $\frac{119}{4}$¢ × (14 × $\frac{15}{12}$ × 5) = 26.03\frac{1}{8}$, *Ans*

24.
15) 18° 30′ 36″, dif. in long.
1 hr. 14 min. 2$\frac{2}{5}$ sec., dif. in time.

10 hr. 10 min.
1 14 2$\frac{2}{5}$ sec.
8 hrs. 55 min. 57$\frac{3}{5}$ sec. A. M., *Ans.*

25. 10 min. after 2 P. M. = 14 hrs. 10 min.

14 hrs. 10 min.
9
5 hrs. 10 min., dif. in time.
15
77° 30′, dif. in long., *Ans.*

26. 142 T. 17 cwt. 16 lb. = 320000 lb. 250 long tons = 560000 lb
$\frac{320000}{560000}$ = $\frac{32}{56}$ = $\frac{4}{7}$ = part of whole delivered;
$\frac{4}{7}$ of $437.50 = $250, *Ans.*

27. Contents of 1$\frac{1}{2}$ inch cube = $\frac{27}{8}$ cu. in.;
(1728 × 27) ÷ $\frac{27}{8}$ = 13824, the No. of cubes.

28.
$1.25 × (188 × 2.8375) = $666.8125, receipts,
$2.25 × 188 = 423.00, cost,
$243.8125, gain

29.
$3.50 × (1200 × .2759) = $1158.78, receipts,
$.55 × 1200 = 660.00, cost,
$498.78, gain.

30.
$.68 × $\frac{250}{3.785}$ = $44.914, receipts,
$.15 × 250 = 37.50, cost,
$7.414, gain,

31.

$$\$1.95 \times \frac{12000 \times 39.37}{36} = \$25590.50\text{, receipts,}$$

$$\$1.75 \times 12000 = \underline{21000.00}\text{, cost,}$$

$$\$4590.50\text{, gain.}$$

32.

$$\$195 \times (100 \times 2.471) = \$48184.50\text{, receipts,}$$

$$\$250 \times 100 = \underline{25000.00}\text{, cost,}$$

$$\$23184.50\text{, gain.}$$

Art. 475.

12. 100% or entire voyage $- 56\% = 44\%$ yet to make ;
8375 mi. $\times .44 =$ 3685 mi., *Ans.*

13. $\$15675 \times .35 = \$5486.25$, gain ;
$\$15675 + \$5486.25 = \$21161.25$, selling price.

14. $\$2.40 + (\$2.40 \times .25) = \$3$, the price per bu. of chestnuts ;

$$\$3 \times 65 = \$195\text{, cost of chestnuts,}$$

$$\$2.40 \times 75 = \underline{180}\text{, " " walnuts,}$$

$$\$15\text{, more for chestnuts.}$$

15. $\$160 \times 98 = \$15680$, cost of land ;
$\$15680 \times .35 = \$5488$, cost of building ;
$(\$15680 + \$5488) - \$18675 = \$2493$, loss.

16. $25\% = \frac{1}{4}$.

$$4\,)\,\underline{\$37800}$$

$$\underline{\$9450}\text{, widow's share.}$$

$$4\,)\,\underline{\$28350}\text{, 1st remainder.}$$

$$\underline{\$7087.50}\text{, son's share.}$$

$$5\,)\,\underline{\$21262.50}\text{, 2d rem.}$$

$$\$4252.50\text{, each daughter.}$$

17.

$$\$240$$

$$\underline{.20}$$

$$\$48.00\text{, gain.}$$

$$\underline{240}$$

$$4\,)\,\underline{\$288}\text{, A's selling price.}$$

$$\underline{\$72}\text{, B's loss.}$$

$$\$216\text{, B's selling price.}$$

18.

$$40\% \text{ of } 960 \text{ bbl.} = 384 \text{ bbl. @ } \$8.90 = \$3417.60$$

$$25\% \text{ of } (960 \text{ bbl.} - 384 \text{ bbl.}) = 144 \text{ bbl. @ } \$8.75 = 1260.$$

$$960 \text{ bbl.} - (384 \text{ bbl.} + 144 \text{ bbl.}) = 432 \text{ bbl. @ } \$8 = \underline{3456.}$$

$$\$8133.60$$

$$\$8133.60 - (\$8.35 \times 960) = \$117.60\text{, gain.}$$

19. 20% or $\frac{1}{5}$ of $\$18620 = \$3724$, 1st payment.
35% of $(\$18620 - \$3724) = \$5213.60$, 2d payment.
$\$18620 - (\$3724 + \$5213.60) = \$9682.40$ still owing.

20. 88050 T. $+ 37\frac{1}{2}\%$ of 88050 T. $= 121068\frac{3}{4}$ T., 2d year;
88050 T. $+ 121068\frac{3}{4}$ T. $= 209118.75$ T. in both years.

21. $\$28.60 + (\$28.60 \times .65) = \$47.19$ grocer's bill.

22. $35\% + 37\frac{1}{2}\% + 45\% = 117\frac{1}{2}\% = 1.175$.
$\$3600 \times 1.175 = \$4230$, saved in 3 yrs.

Art. 476.

6. $918 \div .45 = 2040$, No. of pupils.
$2040 - 918 = 1122$, No. of girls.

8. 5 wks. 4 da. = 39 da.; $33\frac{1}{3}\% = \frac{1}{3}$.
If $\frac{1}{3} = 39$ da., $\frac{3}{3} = 39$ da. $\times 3 = 117$ da., *Ans.*

9. $\$1960 \div .28 = \$7000$, for all.

10. $27300 \div .13 = 210000$, *Ans.*

11. $\$469.20 \div .1875 = \$2502.40$, cost.
$\$2502.40 + \$469.20 = \$2971.60$, selling price.

13. $35\% - 23\% = 12\% = \$7695.75$.
$\$8695.75 \div .12 = \$64131.25$, entire estate.

14. $\$90.30 \div \$.86 = 105$, the No. gal. sold.
$100\% - 16\% = 84\% = 105$ gal.
$105 \div .84 = 125$, the No. gal. at first.

15. $\$695.75 \div .20 = \$3478.75$, *Ans.*

16. $65\% - 35\% = 30\%$ more at 1st sale $= \$1260$.
$\$1260 \div .30 = \$4200$, rec'd for all.

17. $100\% - (12\% + 15\% + 18\%) = 55\%$, apple.
$15\% + 18\% = 33\% = 429$. $429 \div .33 = 1300$, No. trees in all.
$1300 \times .12 = 156$, pear. $1300 \times .15 = 195$, peach.
$1300 \times .18 = 234$, plum. $1300 \times .55 = 715$, apple.

18. $100\% - 20\% = 80\%$, rem. after wife.
$80\% - (\frac{1}{4}$ of 80%, or $20\%) = 60\%$, rem. after son.
$60\% - (\frac{1}{3}$ of 60%, or $20\%) = 40\%$, rem. after daughter.
$40\% = \$24800$, $\$24800 \div .40 = \$62000$, entire estate.

Art. 477.

3. $8875 - 2840 = 6035$, No. cu. ft. remaining,
$6035 \div 8875 = .68 = 68\%$ remaining.

4. **\$450÷\$2025 = .22$\frac{2}{9}$ = 22$\frac{2}{9}$%, *Ans.***

5. **\$6875−\$2475 = \$4400, still to pay,**
\$4400÷\$6875 = .64 = 64%, *Ans.*

6. **\$490÷\$875 = .56 = 56% saved.**

7. **\$13122.50−\$9050 = \$4072.50, gain,**
\$4072.50÷\$9050 = .45 = 45%, *Ans.*

8. **1410÷5875 = .24 = 24%, *Ans.***

9. **\$376÷\$2350 = .16 = 16%, *Ans.***

10. **\$8494−\$6850 = \$1644, gain.**
\$1644÷\$6850 = .24 = 24% gain.

11. **\$$\frac{3}{8}$ × 72 × 45 = \$1215, cost, \$1458−\$1215 = \$243, gain,**
\$243÷\$1215 = .20 = 20%, gain.

12. **8475−5085 = 3390, No. that died,**
3390÷8475 = .40 = 40% died.

13. **\$1077÷\$8975 = .12 = 12%, *Ans.***

14. **3590÷89750 = .04 = 4%, *Ans.***

15. **700÷3500 = .20 = 20% sailed.**
100%−20% = 80% to be sailed.

16. **\$151.74÷\$1896.75 = .08 = 8% deducted.**

17. **\$4675−(\$1870+\$1122) = \$1683 unpaid,**
\$1683÷\$4675 = .36 = 36% unpaid.

Art. 478.

1. **The number itself or 100% + 15% = 115% = 4899.**
4899÷1.15 = 4260, the number.

2. **100%−35% = 65% = 8918. 8918÷.65 = 13720, *Ans.***

3. **87$\frac{1}{2}$%−50% = 37$\frac{1}{2}$% = 9186. 9186÷.375 = 24496, *Ans.***

4. **50% or $\frac{1}{2}$ of 90% = 45% = 81639. 81639÷.45 = 181420, *Ans.***

5. **18729÷2.25 = 8324, the smaller.**
18729−8324 = 10405, the larger.

6. **25% difference = 739. 100% or smaller = 739÷25 = 2956,**
2956 + 739 = 3695, larger.

7. **$\frac{3}{4}$−66$\frac{2}{3}$% or $\frac{2}{3}$ = $\frac{1}{12}$ = 240, 240 × 12 = 2880, entire number.**

8. 100% or son's $+ 120\%$ or father's $= 220\% = \$111.65$.
$\$111.65 \div 2.20 = \$50.75$, son,
$\$111.65 - \$50.75 = \$60.90$, father.

9. $100\% + 140\% = 240\% = \$156$.
$\$156 \div 2.40 = \$65$, cost of one; $\$156 - \$65 = \$91$, cost of other

10. $90 - (\frac{1}{10}$ of $90) = 81$, No. bu. per acre 2d yr.
$45 + (\frac{1}{5}$ of $45) = 54$, No. acres planted 2d yr.
81 bu. $\times 54 = 4374$ bu. raised 2d yr.

11. $100\% - (12\frac{1}{2}\% + 75\%) = 12\frac{1}{2}\% = \frac{1}{8}$ saved.
$\frac{1}{8}$ of $\$2750 = \$343.75$ saved.

12. $375 - 165 = 210$, No. acres remaining.
$210 \div 375 = .56 = 56\%$ remaining.

13. $100\% - 54\% = 46\%$ invested $= \$11500$.
$\$11500 \div .46 = \$25000$, at first.

14. $100\% - 45\% = 55\%$ remaining $= 2915$ bbl.
$2915 \div .55 = 5300$, No. bbl. in all.
5300 bbl. $\times .45 = 2385$ bbl., *Ans.*

15. $\$650 - \$422.50 = \$227.50$, deduction.
$\$227.50 \div \$650 = .35 = 35\%$ deduction.

16. $100\% - (45\% + 25\% + 15\%) = 15\% = \$3840$.
$\$3840 \div .15 = \$25600$, *Ans.*

17. $8740 - 3059 = 5681$, the No. unsold.
$5681 \div 8740 = .65 = 65\%$ unsold.

18. 100% or cost $+ 15\%$ gain $= 115\% = \$20700$.
$\$20700 \div 1.15 = \$18000$, cost.

19. 42900 lb. $\times .43 = 18447$ lb., weight of car.
42900 lb. $-$ 18447 lb. $= 24453$ lb., weight of coal.

20. 100% on horseback $+ 120\%$ by rail $= 220\% = 979$ mi.
979 mi. $\div 2.20 = 445$ mi. on horseback.
$979 - 445 = 534$ mi. by rail.

21. 50% or $\frac{1}{2}$ of $675 = 337\frac{1}{2} = 25\%$ or $\frac{1}{4}$ of No. required.
$337\frac{1}{2} \times 4 = 1350$, the No. required.

22. $\$225 + (\$225 \times .88) = \$423$, *Ans.*

23. $14\frac{2}{7}\%$ or $\frac{1}{7} + 100\%$ or $\frac{7}{7} = \frac{8}{7} = \$28800$;
$\frac{1}{7} = \$3600$, and $\frac{7}{7}$ or cost $= \$25200$;
$\$25200 \div 336 = \$75$, cost per bale.

24. 100% or $\frac{4}{4}$, veterans + 125% or $\frac{5}{4}$, recruits = $\frac{9}{4}$, both = 89172;
$\frac{1}{4}$ = 9908, and $\frac{4}{4}$ or veterans = 39632; $\frac{5}{4}$ or recruits = 49540.

25. 65% = $\frac{13}{20}$ = \$8060;
$\frac{1}{20}$ = \$620, and $\frac{20}{20}$ or entire claim = \$12400, *Ans.*

26. 100% or $\frac{4}{4}$ + 125% or $\frac{5}{4}$ increase = $\frac{9}{4}$ in all = 1728;
$\frac{1}{4}$ = 192, and $\frac{4}{4}$ or first lot = 768, *Ans.*

27. 40% of 65% = .65 × .40 = .26 = 26% = \$5538.
100% = \$5538 ÷ .26 = \$21300, *Ans.*

28. 183$\frac{5}{8}$ acres @ \$122 = \$22402.25;
\$22402.25 + (\$22402.25 × .20) = \$26882.70, *Ans.*

29. \$73125 + \$1125 = \$74250, cost;

$$\frac{\$74250+(\$74250\times .15)}{375}=\$227.70,\text{ rec'd per head.}$$

30. \$15625 × .20 = \$3125, gain, \$12526 × .25 = 3131.50, loss,
\$3131.50 − \$3125 = \$6.50, loss.

31. $$\frac{27500-7425}{27500}=.73=73\%,\ \textit{Ans.}$$

32. 11$\frac{1}{9}$% or $\frac{1}{9}$ of \$1.12$\frac{1}{2}$ = 12$\frac{1}{2}$¢ loss on 1 bu.;
12$\frac{1}{2}$¢ × 9810 = \$1226.25, *Ans.*

33. 45 yds. @ \$6.40 = \$288, cost;
\$288 + (12$\frac{1}{2}$% or $\frac{1}{8}$ of \$288) = \$324, selling price.

34. 100% − 35% sold = 65%, 1st remainder;
35% + (60% of 65%) = 74% sold;
100% − 74% = 26% = 858, No. bales unsold;
100% = 858 ÷ .26 = 3300, No. bales at first.

35. \$37812.50 ÷ 275 = \$137.50, cost per acre.
40% of 275 A. = 110 A.
60% of 165 A. = 99 A.
275 A. − (110 + 99) A. = 66 A.
Gain per A. at 25% = \$34.37$\frac{1}{2}$.
“ “ “ 33$\frac{1}{3}$% = \$45.83$\frac{1}{3}$.
Loss “ “ 50% = \$68.75.
\$34.375 × 110 = \$3781.25, gain.
\$45.83$\frac{1}{3}$ × 99 = \$4537.50, gain.
\$68.75 × 66 = \$4537.50, loss.
Loss and 2d gain cancel, leaving \$3781.25 gain, *Ans.*

36. 9860 lb. @ \$.08$\frac{1}{2}$ = \$838.10, cost of beef.
\$838.10 + (\$838.10 × .01) = \$846.48, total cost.
\$846.48 + (25 % or $\frac{1}{4}$ of \$846.48) = \$1058.10, receipts.

37. 100 % − (1$\frac{1}{2}$ % + 20 % + 5 %) = 73$\frac{1}{2}$ % remaining = 1176 bu.
1176 ÷ .735 = 1600, No. bu. at first.

38. 25 % + (40 % of 75 %) + (60 % of 45 %) = .25 + .30 + .27 = .82
= 82 % paid ;
100 % − 82 % = 18 % still owing = \$2673 ;
\$2673 % ÷ .18 = \$14850, price of house.

39. 100 % − 45 % = 55 %, cost of horse ; \$500 × .55 = \$275, *Ans.*

40. \$2500, B − \$2000, A = \$500 difference ;
\$500 ÷ \$2000 = .25 = 25 %, B more than A.
\$500 ÷ \$2500 = .2 = 20 %, A less than B.

41. 5 % − 3 % = 2 % = \$27.50 ; \$27.50 ÷ .02 = \$1375, am't of bill.

42. 100 % − 3 % = 97 % = \$2279.50 ;
\$2279.50 ÷ .97 = \$2350, first bill.

43. 25 % or $\frac{1}{4}$ gain = \$675 ;
$\frac{4}{4}$ or selling price = \$2700 = 10 % less than cost to build, or 90 % of cost to build ;
\$2700 ÷ .90 = \$3000, cost to build.

44. 25 % or $\frac{1}{4}$ of \$240 = \$60 ;
\$100 − \$60 = \$40 = 20 % or $\frac{1}{5}$ of cost of horse ;
100 % or $\frac{5}{5}$ = \$40 × 5 = \$200, cost of horse.

45. 2000 ÷ 2240 = .89$\frac{2}{7}$ = 89$\frac{2}{7}$ %, *Ans.*

46. $\frac{24 \times 30 \times 6}{27}$ = 160, No. cu. yds. in cellar ;
16 ÷ 160 = .1 = 10 % removed.

47. 100 % = B ; 128 % = A ;
28 ÷ 128 = .21$\frac{7}{8}$ = 21$\frac{7}{8}$ %, B less than A.

48. 100 % or $\frac{8}{8}$ + 112$\frac{1}{2}$ % or $\frac{9}{8}$ = $\frac{17}{8}$ = \$35785 ;
$\frac{1}{8}$ = $\frac{1}{17}$ of \$35785 = \$2105 ; $\frac{8}{8}$ = \$2105 × 8 = \$16840, 1st year,
$\frac{9}{8}$ = \$2105 × 9 = \$18945, 2d year.

49. \$4680 ÷ .32 = \$14625, cost of farm.

50. 40 % of 65 % = .40 × .65 = .26 ; \$7800 ÷ .26 = \$30000.

51. 100% or cost − 12½% loss = 87½% = ⅞ of cost = $23100;
8/8 = (1/7 of $23100) × 8 = $26400, cost;
$33000 − $26400 = $6600, gain;
$6600 ÷ $26400 = .25 = 25% gain, *Ans.*

52. (30 × 40 × 6) − (12 × 18 × 4) = 6336, No. cu. ft. remaining;
6336 ÷ 7200 = .88 = 88% remaining.

53. 40% of 35% = .40 × .35 = .14 = 14% expended;
35% − 14% = 21% on hand;
100% − 21% = 79% lacking = $6715;
$6715 ÷ .79 = $8500, price of house.

55. $5 × .40 = $2; $5 − $2 = $3; $3 × .05 = $.15;
$3 − $.15 = $2.85, 1st price;
$5 × .45 = $2.25; $5 − $2.25 = $2.75, 2d price.

56. $60 − ⅙ of $60 = $50; $50 − ($50 × .10) = $45, *Ans.*

57. $300 − ⅕ of $300 = $240; $240 − ($240 × .10) = $216, *Ans.*

58. 100% − 20% = 80%; 80% × .10 = 8%;
30% − (20% + 8%) = 2% greater reduction in 2d case.
$9875.50 × .02 = $197.51, better for buyer in 2d case.

59.
6) $1785.66
297.61, 1st deduction.
10) $1488.05
148.805, 2d "
297.61
$446.415, total discount.

60. ¼ or 25% + (75% × .15) = 36¼%;
40% − 36¼% = 3¾% difference in discounts.
$346.40 × .0375 = $12.99 less in 1st case.

61. $840 − ($840 × .15) = $714; $714 − ($714 × .05) = $678.30, *Ans.*

62. $875 − ($875 × .40) = $525;
$525 − ($525 × .15) = $446.25, *Ans.*

63. 40% + (60% × .10) = 46% dis. 1st case,
30% + (70% × .20) = 44% " 2d "
$1875.50 × .02 = $37.51 more discount in 1st case.

64. 35% discount leaves 65%; 35% + (65% × .15) = 44¾% discount
$3880.72 × .4475 = $1736.62, discount.

65. 30% + (70% × .20) = 44% discount;
100% − 44% = 56% received.

66. 30% + (70% × .10) = 37%, 1st *Ans.*
50% + (50% × .20) = 60%, 2d "
25% + (75% × .20) = 40%, 3d "
40% + (60% × .20) = 52%, 4th "

67. 40% + (60% × .16⅔) = 50% discount = ½ discount;
$325 × 2 = $650, catalogue price.

68. 40% + (60% × .10) = 46% discount; 50% − 46% = 4% = $25;
$25 ÷ .04 = $625, catalogue price.

Art. 481.

2. 5) $1875
375, gain.
$2250, receipts.

3. 4) $1.60
.40, loss.
$1.20, selling price.

4. 3) $465
155, gain.
$620, receipts.

5. $9864
.37½
$3699, gain.
9864
$13563, receipts.

6. ⅙ of $3930 = $655, loss; $3930 − $655 = $3275, receipts.

7. $125800 × .15 = $18870, loss;
$125800 − $18870 = $106930, receipts.

8. $875 + $1985 = $2860, cost;
$2860 + ($2860 × 2.75) = $10725, receipts.

9. $95 × 378 = $35910, cost; $35910 × .36 = $12927.60, gain;
$35910 + $12927.60 = $48837.60, receipts.

10. $360 × .45 = $162. gain; $360 + $162 = $522, selling price.

11. $41760 × .35 = $14616, total gain.
($41760 + $14616) ÷ 9 = $6264, average price.

12. $125 × 75 = $9375: $9375 × .36 = $3375, gain;
$9375 + $3375 = $12750, receipts.

Art. 482.

2. $\$1875 \div \$7500 = .25 = 25\%$ gain.

3. $\$9102 - (\$8.20 \times 925) = \$1517$, gain;
$\$1517 \div \$7585 = .2 = 20\%$ gain.

4. $(\$13365 - \$12375) \div \$12375 = .08 = 8\%$ gain.

5. $\$6721 \div (\$3.25 \times 2350) = .88 = 88\%$ gain.

6. $\$2.50 - (\frac{1}{5}$ of $\$2.50) = \$2$, selling price;
$(\$2 - \$1.75) \div \$1.75 = .14\frac{2}{7} = 14\frac{2}{7}\%$ gain.

7. $\$24127 - (\$8380 + \$12600) = \$3147$, gain;
$\$3147 \div \$20980 = .15 = 15\%$ gain.

8. $(\$2250 - \$1800) \div \$1800 = .25 = 25\%$ increase.

9. $(\$11422.40 - \$9680) \div \$9680 = .18 = 18\%$ gain.

10. $(\$4232 - \$3680) \div \$3680 = .15 = 15\%$ gain.

11. $\$3477.60 - (\$8.40 \times 360) = \$453.60$, gain.
$\$453.60 \div \$3024 = .15 = 15\%$ gain.

Art. 483.

2. $\$3870 \div .15 = \$25800$, cost.

3. $33\frac{1}{3}\%$ gain $= \frac{1}{3}$ of cost $= \$1440$;
$\frac{3}{3}$ or cost $= \$1440 \times 3 = \$4320$, *Ans.*

4. $37\frac{1}{2}\%$ gain $= \frac{3}{8}$ of capital $= \$5643$;
$\frac{1}{8} = \frac{1}{3}$ of $\$5643 = \$1881$, and
$\frac{8}{8}$ or capital $= \$1881 \times 8 = \$15048$, *Ans.*

5. 100% cost $+ 30\%$ gain $= 130\% = \$87100$;
$100\% = \$87100 \div 1.30 = \$67000$, *Ans.*

6. $\$3780 - \$2700 = \$1080 = 8\%$ of cost;
$\$1080 \div .08 = \$13500$, cost of farm.

7. 100% or cost $+ 20\%$ gain $= 120\% = \$3660$;
$\$3660 \div 1.20 = \$3050$, cost.

8. 100% cost $- 15\%$ loss $= 85\% = \$3570$;
$\$3570 \div .85 = \$4200$, cost.

9. $9680÷(100% + 37½%, or 1.375) = $7040, cost of 1st.
$3190÷(100% − 45%, or .55) = $5800, cost of 2d.
$9680 + $3190 = $12870, receipts,
$7040 + $5800 = $12840, cost.
$30, gain.

10. $22500÷1.25 = $18000, cost to buyer;
$18000÷.90 = $20000, cost to build.

Art. 487.

1. $.90 × 1875 × .08 = $135, *Ans.*

2. $18.75 × 3750 × .12 = $8437.50, *Ans.*

3. $4.60 × 976 = $4489.60, receipts;
$4489.60 − ($4489.60 × .28) = $3232.51, *Ans.*

4. $21375 × .05 = $1068.75, *Ans.*

5. $198375 × .045 = $8926.875, *Ans.*

Art. 488.

1. $551.74÷.0175 = $31528, *Ans.*

2. $39.90÷.0475 = $840, *Ans.*

3. $954.72÷.045 = $21216, *Ans.*

4. $374.88÷.055 = $6816, *Ans.*

5. $396.48÷.125 = $3171.84, *Ans.*

6. $1565.85÷.025 = $62634, *Ans.*

Art. 489.

1. $44843.75÷1.025 = $43750, *Ans.*

2. $98759.50÷1.015 = $97300, *Ans.*

3. $8675.40÷.95 = $9132, am't collected;
$9132 − $8675.40 = $456.60, commission.

4. $5258.25÷1.025 = $5130, to be spent for flour;
$5130÷$4.75 = 1080, the No. of barrels;
$5258.25 − $5130 = $128.25, commission.

5. $73150÷1.045 = $70000, for cotton;
$70000÷$175 = 400, the No. of bales.

6. $\$48970 \div 1.0375 = \$47200$, for lots;
$\$47200 \div \$295 = 160$, the No. of lots.

7. $\$8039.10 \div .9525 = \$8440$, *Ans.*

Art. 493.

2. $\$65000 \times .015 = \$975$, *Ans.*

3. $\$850 \times .0075 = \$6.375$, *Ans.*

4. $\$185000 \times .0525 = \$9712.50$, *Ans.*

5.
$$\begin{array}{rr} \$35000 \times .015 = & \$525 \\ \$85000 \times .025 = & \underline{\$2125} \\ & \$2650, \textit{ Ans.} \end{array}$$

6. $\$3500 \times .005 = \$17.50$, *Ans.*

7. $\$325000 \times .045 = \$14625$, *Ans.*

8. $\$6500 \times 12 \times .0125 = \$975$, *Ans.*

9. $\$165000 \times .01625 = \$2681.25$, *Ans.*

Art. 494.

2. $\$198.33 \div .0275 = \$7212$, *Ans.*

3. $\$12337.50 \div .0525 = \$235000$, *Ans.*

4. $\$3134.90 \div .02875 = \$109040$, *Ans.*

5. $\$123.75 \div .0125 = \$9900$, *Ans.*

6. $\$924.60 \div .02875 = \$32160$, *Ans.*

7. $\$29.45 \div .0125 = \$2356$, *Ans.*

8. $\$5445 \div .01375 = \$396000$, *Ans.*

Art. 495.

2. $\$1270 \div \$63500 = .02 = 2\%$, *Ans.*

3. $\$351.375 \div \$46850 = .0075 = \frac{3}{4}\%$, *Ans.*

4. $\$525 \div \$15000 = .035 = 3\frac{1}{2}\%$, *Ans.*

5. $\$4162.50 \div \$185000 = .0225 = 2\frac{1}{4}\%$, *Ans.*

6. $\$4387.50 \div \$135000 = .0325 = 3\frac{1}{4}\%$, *Ans.*

7. $\$2062.50 \div \$110000 = .01875 = 1\frac{7}{8}\%$, *Ans.*

Art. 498.

2. $\$15600 \div \$975000 = .016$, the rate;
$\$5375 \times .016 = \$86$, A's tax.

3. $\$71000 - \$1241 = \$69759$;
$\$69759 \div \$3875500 = .018$, the rate.

4. $\$5375 \times .018 = \$96.75$; with 1 poll $= \$97.75$, *Ans.*

5. $\$5600 \div (\$8700 + \$22900 + \$35600) = .08\frac{1}{3}$, the rate.

$$\begin{array}{lcll} \$8700 \times .08\frac{1}{3} & = & \$725, & \text{A's tax,} \\ \$22900 \text{ `` ``} & = & \$1908.33\frac{1}{3}, & \text{B's ``} \\ \$35600 \text{ `` ``} & = & \$2966.66\frac{2}{3}, & \text{C's ``} \end{array}$$

Art. 499.

2.
$$\begin{array}{rcl} \$800 & = & \$14.40 \\ 90 & = & 1.62 \\ 1 & = & .018 \\ \hline \$891 & = & \$16.04, \textit{ Ans.} \end{array}$$

3.
$$\begin{array}{rcl} \$1000 & = & \$18.00 \\ 500 & = & 9.00 \\ 25 & = & .45 \\ \hline \$1525 & = & \$27.45, \textit{ Ans.} \end{array}$$

4.
$$\begin{array}{rcl} \$8000 & = & \$144.00 \\ 700 & = & 12.60 \\ 30 & = & .54 \\ 9 & = & .16 \\ \hline \$8739 & = & \$157.30, \textit{ Ans.} \end{array}$$

5.
$$\begin{array}{rcl} \$12000 & = & \$216.00 \\ 300 & = & 5.40 \\ 45 & = & .81 \\ \hline \$12345 & = & \$222.21, \textit{ Ans.} \end{array}$$

6.
$$\begin{array}{rcl} \$11000 & = & \$198.00 \\ 600 & = & 10.80 \\ 50 & = & .90 \\ \hline \$11650 & = & \$209.70, \textit{ Ans.} \end{array}$$

7.
$$\begin{array}{rcl} \$10000 & = & \$180.00 \\ 8000 & = & 144.00 \\ 200 & = & 3.60 \\ 10 & = & .18 \\ 2 & = & .036 \\ \hline \$18212 & = & \$327.82, \textit{ Ans.} \end{array}$$

8.
$$\begin{array}{rcl} \$24000 & = & \$432.00 \\ 800 & = & 14.40 \\ 60 & = & 1.08 \\ 3 & = & .054 \\ \hline \$24863 & = & \$447.53, \textit{ Ans.} \end{array}$$

9.
$$\begin{array}{rcl} \$80000 & = & \$1440.00 \\ 3000 & = & 54.00 \\ 900 & = & 16.20 \\ 60 & = & 1.08 \\ 5 & = & .09 \\ \hline \$83965 & = & \$1511.37, \textit{ Ans.} \end{array}$$

10.
$$\begin{array}{rcl} \$700 & = & \$12.60 \\ 20 & = & .36 \\ 9 & = & .162 \\ .80 & = & .014 \\ \hline \$729.80 & = & \$13.14, \textit{ Ans.} \end{array}$$

11.
$$\begin{array}{rcr} \$800 & = & \$14.40 \\ 30 & = & .54 \\ 1 & = & .018 \\ .40 & = & .007 \\ \hline \$831.40 & = & \$14.96, \textit{ Ans.} \end{array}$$

12.
$$\begin{array}{rcr} \$1200 & = & \$21.60 \\ 10 & = & .18 \\ 3 & = & .054 \\ .75 & = & .013 \\ \hline \$1213.75 & = & \$21.85, \textit{ Ans.} \end{array}$$

13.
$$\begin{array}{rcr} \$3000 & = & \$54.00 \\ 100 & = & 1.80 \\ 40 & = & .72 \\ 5 & = & .09 \\ .60 & = & .01 \\ \hline \$3145.60 & = & \$56.62, \textit{ Ans.} \end{array}$$

14.
$$\begin{array}{rcr} \$12000 & = & \$216.00 \\ 800 & = & 14.40 \\ 60 & = & 1.08 \\ 9 & = & .162 \\ .80 & = & .014 \\ \hline \$12869.80 & = & \$231.66, \textit{ Ans.} \end{array}$$

15.
$$\begin{array}{rcr} \$30000 & = & \$540.00 \\ 2000 & = & 36.00 \\ 100 & = & 1.80 \\ 30 & = & .54 \\ 1 & = & .018 \\ .20 & = & .003 \\ \hline \$32131.20 & = & \$578.36, \textit{ Ans.} \end{array}$$

16.
$$\begin{array}{rcr} \$90000 & = & \$1620.00 \\ 2000 & = & 36.00 \\ 300 & = & 5.40 \\ 80 & = & 1.44 \\ 6 & = & .108 \\ .25 & = & .004 \\ \hline \$92386.25 & = & \$1662.95, \textit{ Ans.} \end{array}$$

17.
$$\begin{array}{rcr} \$10000 & = & \$180.00 \\ 8000 & = & 144.00 \\ 100 & = & 1.80 \\ 30 & = & .54 \\ 9 & = & .162 \\ .90 & = & .016 \\ \hline \$18139.90 & = & \$326.52, \textit{ Ans.} \end{array}$$

Art. 505.

2. $(\$108 + \$\frac{1}{4}, \text{ or } \$108\frac{1}{4}) \times 575 = \$62243.75$, *Ans.*

3. $(\$102\frac{1}{2} + \$\frac{1}{8}, \text{ or } \$102\frac{5}{8}) \times 500 = \$51312.50$, *Ans.*

4. $(\$104\frac{1}{4} + \$\frac{1}{8}, \text{ or } \$104\frac{3}{8}) \times 175 = \$18265.625$, *Ans.*

5. $(\$118\frac{1}{2} + \$\frac{1}{4}, \text{ or } \$118\frac{3}{4}) \times 125 = \$14843.75$, *Ans.*

6. $(\$113 + \$\frac{1}{8}, \text{ or } \$113\frac{1}{8}) \times 396 = \$44797.50$, *Ans.*

7. $(\$92 - \$\frac{1}{8}, \text{ or } \$91\frac{7}{8}) \times 1876 = \$172357.50$, *Ans.*

8. $(\$113\frac{5}{8} - \$\frac{1}{4}, \text{ or } \$113\frac{3}{8}) \times 1280 = \$145120$, *Ans.*

9. $(\$107\frac{7}{8} - \$\frac{1}{4}, \text{ or } \$107\frac{5}{8}) \times 3756 = \$404239.50$, *Ans.*

Art. 506.

2. $\$29484 \div (\$102\frac{1}{4} + \$\frac{1}{8} \text{ or } \$102.375) = 288$, the No. shares.

3. $\$91300 \div (\$103\frac{1}{2} + \$\frac{1}{4} \text{ or } \$103.75) = 880$, the No. bonds.

4. $\$7049 \div (\$92\frac{5}{8} + \$\frac{1}{8}$ or $\$92.75) = 76$, the No. shares.

5. $(\$100 - \$8) + \$\frac{1}{4} = \$92\frac{1}{4}$ per share;
   $\$33948 \div \$92.25 = 368$, the No. shares.

6. $\$69903 \div (\$107\frac{3}{4} + \$\frac{1}{8}$ or $\$107.875) = 648$, the No. bonds.

7. $\$9717 \div (\$78\frac{7}{8} + \$\frac{1}{8}$ or $\$79) = 123$, the No. shares.

8. $\$12789 \div (\$86\frac{3}{4} + \$\frac{1}{4}$ or $\$87) = 147$, the No. shares.

Art. 507.

2. $\$3000 \div \$4 = 750$, the No. bonds;
   $(\$106\frac{1}{4} + \$\frac{1}{8}$ or $\$106\frac{3}{8}) \times 750 = \$79781.25$, *Ans.*

3. $\$5000 \div \$10 = 500$, the No. bonds;
   $(\$98 + \$\frac{1}{8}$ or $\$98\frac{1}{8}) \times 500 = \$49062.50$, *Ans.*

4. $\$8400 \div \$6 = 1400$, the No. shares;
   $(\$107\frac{1}{2} + \$\frac{1}{4}$, or $\$107\frac{3}{4}) \times 1400 = \$150850$, *Ans.*

5. $\$9800 \div \$7 = 1400$, the No. bonds;
   $(\$101\frac{1}{4} + \$\frac{1}{4}$, or $\$101\frac{1}{2}) \times 1400 = \$142100$, *Ans.*

6. $\$8400 \div \$5 = 1680$, the No. bonds;
   $(\$94\frac{1}{2} + \$\frac{1}{8}$, or $\$94\frac{5}{8}) \times 1680 = \$158970$, *Ans.*

7. $3\frac{1}{2}\%$ quarterly $= 3\frac{1}{2}\% \times 4 = 14\%$ per annum;
   $\$1120 \div \$14 = 80$, the No. shares;
   $(\$109\frac{5}{8} + \$\frac{1}{4}$, or $\$109\frac{7}{8}) \times 80 = \$8790$, *Ans.*

8. $1\frac{3}{4}\%$ semi-annually $= 1\frac{3}{4}\% \times 2 = 3\frac{1}{2}\%$ annually;
   $\$3500 \div \$3.50 = 1000$, the No. bonds;
   $(\$94\frac{1}{8} + \$\frac{1}{8}$, or $\$94\frac{1}{4}) \times 1000 = \$94250$, *Ans.*

9. $\$4500 \div \$5 = 900$, the No. shares;
   $(\$103\frac{1}{2} + \$\frac{1}{8}$, or $\$103\frac{5}{8}) \times 900 = \$93262.50$, *Ans.*

Art. 508.

2. $\$7 \div (\$139\frac{7}{8} + \$\frac{1}{8}$, or $\$140) = .05 = 5\%$, *Ans.*

3. $\$8 \div (\$159\frac{3}{4} + \$\frac{1}{4}$, or $\$160) = .05 = 5\%$, *Ans.*

4. $\$12 \div (\$119\frac{7}{8} + \$\frac{1}{8}$, or $\$120) = .10 = 10\%$, *Ans.*

5. $\$8 \div (\$79\frac{7}{8} + \$\frac{1}{8}$, or $\$80) = .10 = 10\%$;
   $\$5 \div (\$62\frac{3}{8} + \$\frac{1}{8}$, or $\$62.50) = .08 = 8\%$;
   $10\% - 8\% = 2\%$, the former.

6. $\$6 \div (\$74\frac{3}{4} + \$\frac{1}{4}$, or $\$75) = .08 = 8\%$;
$\$4 \div (\$53\frac{1}{2} + \$\frac{1}{4}$, or $\$53.75) = .07\frac{19}{43} = 7\frac{19}{43}\%$;
$8\% - 7\frac{19}{43}\% = \frac{24}{43}\%$, *Ans.*

Art. 517.

3. 500 cases − 2% of 500 cases = 490 cases;
($23 × 490) × .65 = $7325.50, *Ans.*

4. $.36 × (75 × 190) = $5130, *Ans.*

5. $.40 × (86 × 360) × .25 = $3096, *Ans.*

6. $.05 × (860 × 2240) × .25 = $24,080, *Ans.*

7. $.50 × 600 = $300, specific duty ;
$1.20 × 600 × .25 = $180, ad valorem duty ;
$300 + $180 = $480, *Ans.*

10. $3.75 × 8500 × .20 = $6375, ad valorem,
$.45 × 8500 = 3825, specific,
$10200, *Ans.*

11. 875 × 126, or 110250 gal. × .12 = 13230 gal. leakage ;
$.09 × (110250 − 13230) = $8731.80, duty on molasses;
800 × 525, or 420000 lb. × .14 = 58800 lb. tare ;
$.02\frac{1}{4} \times (420000 - 58800) = \$8127$, duty on sugar ;
$8731.80 + $8127 = $16858.80, *Ans.*

Art. 525.

3. $890
.06
$53.40 = Int. 1 yr.
8.90 = " 2 mo.
2.225 = " 15 da.
$64.525, *Ans.*

4. $625
.08
$50.00 = Int. 1 yr.
$100.00 = " 2 yrs.
16.667 = " 4 mo.
4.167 = " 1 mo.
2.778 = " 20 da.
.694 = " 5 "
.277 = " 2 "
$124.583, *Ans.*

5. $415.50
.10
$41.55 = Int. 1 yr.
20.775 = " 6 mo.
3.462 = " 1 "
1.154 = " 10 da.
.23 = " 2 "
$67.171, *Ans.*

6. $624.25
.045
$28.091 = Int. 1 yr.
$140.455 = " 5 yrs.
11.704 = " 5 mo.
1.170 = " 15 da.
$153.329, *Ans.*

7. $2250
.09
$202.50 = Int. 1 yr.
$405.00 = " 2 yrs.
101.25 = " 6 mo.
16.875 = " 1 "
$523.125, *Ans.*

8. $618
.075
$46.35 = Int. 1 yr.
3.862 = " 1 mo
1.287 = " 10 da.
1.287 = " " "
$52.786, *Ans.*

9. $925
.055
$50.875 = Int. 1 yr.
$152.625 = " 3 yrs.
16.958 = " 4 mo.
4.239 = " 1 "
.848 = " 6 da.
$174.67, *Ans.*

10. $580
.10
$58.00 = Int. 1 yr.
$232.00 = " 4 yrs.
4.83 = " 1 mo.
1.61 = " 10 da.
1.61 = " " "
.32 = " 2 "
.32 = " " "
$240.70, *Ans.*

11. $912.60
.07
$63.882 = Int. 1 yr.
31.941 = " 6 mo.
15.97 = " 3 "
1.774 = " 10 da.
$113.567, *Ans.*

12. $515.80
.035
$18.053 = Int. 1 yr.
$36.106 = " 2 yrs.
4.513 = " 3 mo.
.15 = " 3 da.
$40.769, *Ans.*

13. $895
.09
$80.55 = Int. 1 yr.
$40.275 = " 6 mo.
6.712 = " 1 "
.671 = " 3 da.
5.368 = " 24 "
$53.026, *Ans.*

14. $36000
.075
15) $2700.00 = Int. 1 yr.
$180 = " 24 da.

15. $2787.20
$.05\frac{5}{8}$
$156.78 = Int. 1 yr.
$783.90 = " 5 yrs.
78.39 = " 6 mo.
26.13 = " 2 "
2.61 = " 6 da.
8.71 = " 20 "
$899.74
2787.20
$3686.94, *Ans.*

16. $4363.20
$.05\frac{2}{3}$
$247.248 = Int. 1 yr.
$1483.488 = " 6 yrs.
123.624 = " 6 mo.
20.604 = " 1 "
10.302 = " 15 da.
6.868 = " 10 "
$1644.886
4363.20
$6008.086, *Ans.*

17. $5760
$.08\frac{3}{4}$
$504.00 = Int. 1 yr.
$2520.00 = " 5 yrs.
252.00 = " 6 mo.
25.20 = " 18 da.
8.40 = " 6 "
$2805.60
5760.00
$8565.60, *Ans.*

18. $715.50
$.07\frac{1}{5}$
$51.516 = Int. 1 yr.
$206.064 = " 4 yrs.
17.172 = " 4 mo.
4.293 = " 1 "
.429 = " 3 da.
1.431 = " 10 "
1.431 = " " "
$230.82
715.50
$946.32, *Ans.*

19. $604.80
.065
$39.312 = Int. 1 yr.
$275.184 = " 7 yrs.
9.828 = " 3 mo.
1.092 = " 10 da.
1.092 = " " "
$287.196
604.80
$891.996 = $892, *Ans.*

20. $1120
$.03\frac{3}{4}$
$42.00 = Int. 1 yr.
$252.00 = " 6 yrs.
14.00 = " 4 mo.
3.50 = " 1 "
2.80 = " 24 da.
$272.30
1120.00
$1392.30, *Ans.*

21. $118.80
$.05\frac{2}{3}$
$6.732 = Int. 1 yr.
$33.66 = " 5 yrs.
8.366 = " 6 mo.
.186 = " 10 da.
$37.212
118.80
$156.01, *Ans.*

22. $843.75
.065
$54.843 = Int. 1 yr.
$219.372 = " 4 yrs.
27.421 = " 6 mo.
4.570 = " 1 mo.
.152 = " 1 da.
2.285 = " 15 "
$253.80
843.75
$1097.55, *Ans.*

23.
$2952
.055
$162.36 = Int. 1 yr.
$487.08 = " 3 yrs.
81.18 = " 6 mo.
27.06 = " 2 "
6.765 = " 15 da.
5.412 = " 12 "
$607.50
2952.00
$3559.50, *Ans.*

24.
$1296
.0675
$87.48 = Int. 1 yr.
$962.28 = " 11 yrs.
43.74 = " 6 mo.
7.29 = " 1 "
3.645 = " 15 da.
.243 = " 1 "
.243 = " 1 "
$1017.441
1296.00
$2313.44, *Ans.*

25.
$8760
.075
$657.00 = Int. 1 yr.
$1971.00 = " 3 yrs.
219.00 = " 4 mo.
54.75 = " 1 "
36.50 = " 20 da.
10.95 = " 6 "
5.475 = " 3 "
$2297.68
8760.00
$11057.68, *Ans.*

26.
$15675
.08
$1254.00 = Int. 1 yr.
$2508.00 = " 2 yrs.
627.00 = " 6 mo.
104.50 = " 1 "
52.25 = " 15 da.
$3291.75
15675.00
$18966.75, *Ans.*

27.
$26850
.09
$2416.50 = Int. 1 yr.
$7249.50 = " 3 yrs.
604.125 = " 3 mo.
67.125 = " 10 da.
13.425 = " 2 "
$7934.175
26850.00
$34784.18, *Ans.*

Art. 526.

2. $560 × .09 = $50.40, *Ans.*

3. $1800 × .073$\frac{1}{3}$ = $132, *Ans.*

4. $\frac{\$2500 \times .144}{6} \times 8 = \$480$, *Ans.*

5. $\frac{\$556.50 \times .312}{6} \times 9 = \$260.44$, *Ans.*

6. $\frac{\$1080 \times .366\frac{2}{3}}{6} \times 5 = \$330$, *Ans*

7. $\frac{\$4096.64 \times .1875}{6} \times 7\frac{1}{2} = \$960.15$, *Ans.*

8. $\frac{\$5840 \times .258}{6} \times 8\frac{1}{2} = \$2134.52$, *Ans.*

9. $\frac{\$650 \times .456}{6} \times 5\frac{1}{2} = \$271.70$, *Ans.*

10. $\$840 \times .207\frac{5}{6} = \$174.58$, *Ans.*

11. $\frac{\$3604.50 \times .329\frac{1}{3}}{6} \times 10 = \$1978.47$, *Ans.*

12. $\frac{\$337.50 \times .253\frac{1}{3}}{6} \times 12 = \$171$, *Ans.*

13. $\frac{\$8800 \times .2085}{6} \times 8\frac{1}{2} = \$2599.30$, *Ans.*

14. $\frac{\$1464 \times .2645}{6} \times 7 = \$451.77$, *Ans.*

15. $\frac{\$181.20 \times .389}{6} \times 6\frac{1}{2} = \$76.36$, *Ans.*

16. $\frac{\$360.60 \times .068}{6} \times 5\frac{3}{4} = \$23.50$, *Ans.*

17. $\frac{\$2880 \times .179\frac{5}{6}}{6} \times 3\frac{1}{2} = \$302.12$, *Ans.*

18. $\frac{\$156.25 \times .234\frac{2}{3}}{6} \times 4\frac{1}{2} = \$27.49$, *Ans.*

19. $\frac{\$875 \times .2895}{6} \times 4 = \$168.88$, *Ans.*

20. $\frac{\$9850 \times .147\frac{5}{6}}{6} \times 8 = \$1941.55$, *Ans.*

Art. 527.

2.
$$\begin{array}{rcll} \$350 & = & \text{Int.} & 60 \text{ da.} \\ \underline{175} & = & `` & \underline{30}\ `` \\ \$525 & = & `` & 90\ `` \end{array}$$

3.
$$\begin{array}{rcll} \$750.00 & = & \text{Int.} & 60 \text{ da.} \\ \underline{187.50} & = & `` & \underline{15}\ `` \\ \$562.50 & = & `` & 45\ `` \end{array}$$

4. $1000.00 = Int. 60 da.
333.33 = “ 20 “
6) $1333.33 = “ 80 “
222.22
$1555.56 = “ at 7%.

5. $450 = Int. 60 da.
225 = “ 30 “
45 = “ 6 “
6) $720 = “ 96 “
$120 × 8 = $960 at 8%.

6. $680 = Int. 60 da.
$340 = “ 30 “
68 = “ 6 “
6) $272 = “ 24 “
$45.333 × 5 = $226.67,
Int. at 5%.

8. $834.00 = Int. 60 da.
2) $166.80 = “ 12 “
$83.40 = Int. at 3%.

9. $925.00 = Int. 60 da
6) 154.166 = “ 10 “
$25.694 × 4 = $102.78
= Int. at 4%.

10. $865.00 = Int. 60 da.
216.25 = “ 15 “
$1081.25 = “ 75 “

11. $9755.00 = Int. 60 da.
3251.67 = “ 20 “
975.50 = “ 6 “
6) $13982.17 = “ 86 “
2330.36\frac{1}{6}$ × 4 = $9321.45,
Int. at 4%.

12. $8506.00 = Int. 60 da.
4253.00 = “ 30 “
2835.33 = “ 20 “
283.53 = “ 2 “
6) $15877.86 = “ 112 “
$2646.31 × 4 = $10585.24,
Int. at 4%.

13. $9568.75 = Int. 60 da.
$3189.583 = “ 20 “
478.437 = “ 3 “
$3668.02 = “ 23 “

14. $37.5375 = Int. 60 da.
$18.7687 = “ 30 “
3.7537 = “ 6 “
.6256 = “ 1 “
6) $23.1481 = “ 37 “
$3.858 × 8 = $30.86,
Int. at 8%.

15. $1680 = Int. 60 da.
6) $112 = “ 4 “
$18.666 × 5 = $93.33,
Int. at 5%.

16. $4270.00 = Int. 60 da.
$427.00 = “ 6 “
213.50 = “ 3 “
2) $640.50 = “ 9 “
$320.25 = Int. at 3%.

17. $3650 = Int. 60 da.
$730 = “ 12 “
121.666 = “ 2 “
6) $851.666 = “ 14 “
$141.944 × 4 = $567.77,
Int. at 4%.

Art. 529.

2. $950.000 = Int. 60 da.
73) 380.000 = " 24 "
5.205
$374.79, exact interest.

3. $835.00 = Int. 60 da.
73) 528.833 = " 38 "
7.244
$521.59, exact int.

4. $5675.00 = Int. 60 da.
6) 6904.583 = " 73 "
1150.763 = " at 1%.
73) 4603.052 = " " 4%.
63.05
$4540.00, exact int.

5. $1865.64 = Int. 60 da.
6) 4290.972 = " 138 "
715.162 = " at 1%.
73) 5006.134 = " " 7%.
68.577
$4937.56, exact int.

6. $1937.24 = Int. 60 da.
6) 6360.60 = " 197 "
1060.10 = " at 1%.
73) 4240.40 = " " 4%.
58.087
$4182.31, exact int.

7. $6214.000 = Int. 60 da.
6) $24648.866 = " 238 "
4108.144 = " at 1%.
73) 20540.720 = " " 5%.
281.379
$20259.341, exact int.

8. $8640
.135
$1166.40 = Int. 2 yrs 3 mo.
$86.40 = " 60 da.
73) 41.76 = " 29 "
.57
$41.19, ex. int. 29 da.
1166.40
$1207.59, *Ans.*

9. $6240
.205
$1279.20 = Int. 3 yrs. 5 mo.
62.40 = " 60 da.
73) 28.08 = " 27 "
.384
$27.696, ex. int. 27 da.
1279.20
$1306.90, *Ans.*

11. Time = 9 mo. 18 da.
$6878400
.045
$309528.00 = Int. 9 mo.
$68784.00 = " 60 da.
73) 20635.20 = " 18 "
282.673
$20352.527, ex. int. 18 da.
309528.00
6) 329880.527 = Int. at 6%.
54980.087 = " " 1%.
$274900.435 = " " 5%.

12. Time = 3 mo. 6 da.

$$\begin{array}{rll}
\$65000 & & \\
.015 & & \\
\hline
\$975.00 & = & \text{Int. 3 mo.} \\
\hline
\$650.00 & = & \text{“ 60 da.} \\
\hline
73\ )\ 65.00 & = & \text{“ \ 6 “} \\
89 & & \\
\hline
\$64.11, & & \text{ex. int. 6 da.} \\
975.00 & & \\
\hline
6\ )\ 1039.11 & = & \text{Int. at } 6\%. \\
173.185 & = & \text{“ \ “ } 1\%. \\
4 & & \\
\hline
\$692.740 & = & \text{“ \ “ } 4\%.
\end{array}$$

13. Time = 1 yr. 1 mo. 6 da.

$$\begin{array}{rll}
\$14900 & & \\
.065 & & \\
\hline
\$968.50 & = & \text{Int. 1 yr. 1 mo.} \\
\hline
\$149.00 & = & \text{“ \ 60 da.} \\
\hline
73\ )\ 14.90 & = & \text{“ \ \ 6 “} \\
.204 & & \\
\hline
\$14.696, & & \text{ex. int. 6 da.} \\
968.50 & & \\
\hline
6\ )\ 983.196 & = & \text{Int. at } 6\%. \\
163.866 & = & \text{“ \ “ } 1\%. \\
\hline
\$819.33 & & \text{“ \ “ } 5\%.
\end{array}$$

14. Time = 3 yrs. 18 da.

$$\begin{array}{rll}
\$23960 & & \\
.18 & & \\
\hline
\$4312.80 & = & \text{Int. 3 yrs.} \\
\hline
\$239.60 & = & \text{“ 60 da.} \\
\hline
73\ )\ 71.88 & = & \text{“ 18 “} \\
.984 & & \\
\hline
\$70.896, & & \text{ex. int. 18 da.} \\
4312.80 & & \\
\hline
6\ )\ 4383.696 & = & \text{Int. at } 6\%. \\
730.615 & = & \text{“ \ “ } 1\%. \\
\hline
\$5114.31, & & \text{“ \ “ } 7\%.
\end{array}$$

Art. 530.

2. \$104.52÷.067 = \$1560, *Ans.*

3. \$232.75÷.133 = \$1750, *Ans.*

4. \$556.80÷.464 = \$1200, *Ans.*

5. \$195÷.015 = \$13000, *Ans.*

6. \$16117.92÷1.148 = \$14040, *Ans.*

7. \$151.25÷.01375 = \$11000, *Ans.*

8. \$271.25÷.0516⅔ = \$5250, *Ans.*

Art. 531.

2. $\frac{\$1692.90}{\$.02475 \times 7600} = 9$, the rate.

3. $\frac{\$447.26}{\$.012\frac{2}{3} \times 5885} = 6$, the rate.

4. $\frac{\$347.60}{\$.004\frac{7}{18} \times 14400} = 5\frac{1}{2}$, the rate.

5. $\frac{\$205.92}{\$.001\frac{5}{6} \times 17280} = 6\frac{1}{2}$, the rate.

6. $\underline{\$598.60} =$ Int. 60 da.
$73\ )\ \$1855.66 =$ " 186 "
$\underline{25.42}$
$6\ )\ \$1830.24$, ex. int. at 6%.
305.04, " " " 1%.
$\$1525.20 \div \$305.04 = 5$, the rate.

7. $\underline{\$1365.10} =$ Int. 60 da.
$73\ )\ \$4914.36 =$ " 216 "
$\underline{67.32}$
$6\ )\ \$4847.04$, ex. int, at 6%.
807.84, " " " 1%.
$\$3635.28 \div \$807.84 = 4\frac{1}{2}$, the rate.

8. $\frac{\$1486.76 - \$1240}{\$.033\frac{1}{6} \times 1240} = 6$, the rate

9. $\frac{\$3100}{\$.0025\frac{5}{6} \times 240000} = 5$; the rate

Art. 532.

2. $\frac{\$38.34}{\$284 \times .06} = 2\frac{1}{4}$ yrs. = 2 yrs. 3 mo., *Ans.*

3. $\frac{\$982.80}{\$3640 \times .075} = 3.6$ yrs. = 3 yrs. 7 mo. 6 da., *Ans.*

4. $\frac{\$4875 - \$3600}{\$3600 \times .05} = 7\frac{1}{12}$ yrs. = 7 yrs. 1 mo., *Ans.*

5. $\frac{\$8850 - \$7080}{\$7080 \times .045} = 5\frac{1770}{3186}$ yrs. = 5 yrs. 6 mo. 20 da., *Ans.*

6. $\frac{\$9450 - \$5600}{\$5600 \times .055} = 12\frac{1}{2}$ yrs. = 12 yrs. 6 mo., *Ans.*

7. $\frac{\$445.90}{\$1260 \times .065} = 5\frac{364}{819}$ yrs. = 5 yrs. 5 mo., 10 da., *Ans.*

8. $\frac{\$770}{\$3960 \times .05} = 3\frac{176}{198}$ yrs. = 3 yrs. 10 mo. 20 da., *Ans.*

9. $\frac{\$18.25}{\$1825 \times .05} \times 365 = 73$, the No. days.

Art. 534.

1. Time = 93 days.

$3000
.0155
6) $46.50, Int. at 6%.
7.75
$38.75 " " 5%
3000.00
$3038.75, *Ans.*

2. Time = 63 days.

$5600
.0105
$58.80
5600.00
$5658.80, *Ans.*

3. Time = 107 days.

$7500
.017$\frac{5}{6}$
$133.75
7500
$7633.75, *Ans.*

4. Time = 6 mo. – 3 da.

$960.50
.0295
$28.334
960.50
$988.83, *Ans.*

5. Time = 93 days.

$12000
.0155
12) $186.00, Int. at 6%.
15.50, " " ½%.
$170.50, " " 5½%.
12000.00
$12170.50, *Ans.*

Art. 539.

1. $2500, 1st principal.
.085, 1 yr. 5 mo.
$212.50
2500.00
$2712.50, 1st amount.
750.00, 1st payment.
$1962.50, 2d principal.
.005, 1 mo.
$9.812

$9.812
1962.50
$1972.312, 2d amount.
465.00, 2d payment.
$1507.312, 3d principal.
.0875, 1 yr. 5 mo. 15 da.
$131.889
1507.312
$1639.201, 3d amount.

$1639.201,	3d amount.
390.00,	3d payment.
$1249.201,	4th principal.
.0325,	6 mo. 15 da.
$40.599	
1249.202	
$1289.80,	due Jan. 1, '84.

2.

$3650,	1st principal.
.02,	4 mo.
$73.00	
3650.00	
$3723.00,	1st amount.
1250.00,	" payment.
$2473.00,	2d principal.
.034,	6 mo. 24 da.
$84.082	(more than paym't).
$2473.00,	2d principal.
.025,	5 mo.
$61.825	
84.082	
$145.907,	sum of int.
2473.00	
$2618.907,	2d amount.
1020.00,	two payments.
$1598.907,	3d principal.
.021,	4 mo. 6 da.
$33.578	
1598.907	
$1632.485,	3d amount.
600.00,	4th payment.
$1032.485,	" principal.
.04,	8 mo.
$41.299	
1032.485	
$1073.78,	due Jan. 1, '85.

3.

$1175,	1st principal.
.015	
$17.625	
1175.00	
$1192.625,	1st amount.
25.00,	" payment.
$1167.625,	2d principal.
.019,	3 mo. 24 da.
$22.184	
1167.625	
$1189.809,	2d amount.
195.00,	" payment.
$994.809,	3d principal.
.006,	1 mo. 6 da.
$5.968	
994.809	
$1000.777,	3d amount.
465.00,	" payment.
$535.777,	4th principal.
.0075,	1 mo. 15 da.
$4.018	
535.777	
$539.795,	4th amount.
400.00,	" payment.
$139.795,	5th principal.
.0025,	15 da.
$.349	
139.795	
$140.14,	due May 1, '86.

4.

$8960,	1st principal.
.037⅔,	7 mo. 16 da.
6) 337.493,	int. at 6%.
56.248	
$281.245,	" " 5%.
8960.00	
$9241.245,	1st amount.

$9241.245,	1st amount.
1000.00,	“ payment.
$8241.245,	2d principal.
.0275,	5 mo. 15 da.
6) 226.634,	int. at 6%.
37.772	
$188.862,	“ “ 5%.
8241.245	
$8430.107,	2d amount.
950.00,	“ payment.
$7480.107,	3d principal.
.042,	8 mo. 12 da.
6) 314.164,	int. at 6%.
52.360	
$261.804,	“ “ 5%.
7480.107	
$7741.911,	3d amount.
1200.00,	“ payment.
$6541.911,	4th principal.
.075⅓,	1 yr. 3 mo. 2 da.
6) 492.828,	int. at 6%.
82.137	
$410.686,	“ “ 5%.
6541.911	
$6952.597,	4th amount.
2560.00,	“ payment.
$4392.597,	5th principal.
.035⅙,	7 mo. 1 da.
6) 154.472,	int. at 6%.
25.745	
$128.727,	“ “ 5%.
4392.597	
$4521.324,	5th amount.
1875.00,	“ payment.
$2646.324,	6th principal.
.022⅓,	4 mo. 14 da.
6) 59.101,	int. at 6%.

6) 59.101,	int. at 6%.
9.85	
$49.251,	“ “ 5%.
2646.324	
$2695.575,	due Apr. 15, '84

5.

$8960,	1st principal.
.037⅔,	7 mo. 16 da.
3) $337.493,	int. at 6%.
112.497	
$449.99,	“ “ 8%.
8960.00	
$9409.99,	1st amount.
1000	“ payment.
$8409.99,	2d principal.
.0275,	5 mo. 15 da.
3) 231.274,	int. at 6%.
77.091	
$308.365,	“ “ 8%.
8409.99	
$8718.355,	2d amount.
950.00	“ payment.
$7768.355,	3d principal.
.042,	8 mo. 12 da.
3) 326.270,	int. at 6%.
108.756	
$435.026,	“ “ 8%.
7768.355	
$8203.381,	3d amount.
1200.00,	“ payment.
$7003.381,	4th principal.
.075⅓,	1 yr. 3 mo. 2 da.
3) 527.588,	int. at 6%.
175.862	
$703.450,	“ “ 8%.
7003.381	
$7706.831,	4th amount.

\$7706.831,	4th amount.
2560.00	" payment.
\$5146.831,	5th principal.
.035$\frac{1}{6}$,	7 mo. 1 da.
3) 180.995,	int. at 6%.
60.331	
\$241.326,	" " 8%.
5146.831	
\$5388.157,	5th amount.
1875.00,	" payment.
\$3513.157,	6th principal.
.022$\frac{1}{3}$,	4 mo. 14 da.
3) 78.460,	int. at 6%.
26.153	
\$104.613,	" " 8%.
3513.157	
\$3617.77,	due Apr. 15, '84.

6.

\$9650,	1st principal.
.04,	8 mo.
6) 386.00,	int. at 6%.
64.333	
\$321.666,	" " 5%.
\$9650,	1st principal.
.025,	5 mo.
6) 241.25,	int. at 6%.
40.208	
\$201.042	" " 5%.
321.666	
\$522.708,	sum of int.
9650.00	
\$10172.708,	1st amount.
\$10172.708,	1st amount.
1100.000,	two payments.
\$9072.708,	2d principal.
.04,	4 mo.
6) 362.908,	int. at 6%.
60.484	
\$302.424,	" " 5%.
9072.708	
\$9375.122,	2d amount.
1250.00,	3d payment.
\$8125.122,	3d principal.
.089,	1 yr. 5 mo. 24 da.
6) 723.135,	int. at 6%.
120.522	
\$602.613,	" " 5%.
8125.122	
\$8727.735,	3d amount.
2250.00,	4th payment.
\$6477.735,	4th principal.
.1295,	2 yrs. 1 mo. 27 da.
6) 838.866,	int. at 6%.
139.811	
\$699.055,	" " 5%.
6477.735	
\$7176.79,	4th amount.
2000.00,	5th payment.
\$5176.79,	5th principal.
.0165,	3 mo. 9 da.
6) 85.417,	int. at 6%.
14.236	
\$71.181,	" " 5%.
5176.79	
\$5247.97,	due Jan. 1, '81.

Art. 542.

1.	Principal		$2500.00
	Int. from Jan. 1 to Sept. 1 (8 mo.)		100.00
	Am't of 1st payment on Sept. 1 (190 da.)	$773.75	
	" " 2d " " " (125 ")	510.42	
	" " 3d " " " (45 ")	604.50	$1888.67
	Due Sept. 1, '85		$711.33
2.	Principal		$12500.00
	Int. from Oct. 17, '85, to July 15, '86 (271 da.)		564.583
	Am't of 1st paym't on July 15, '86 (215 da.)	$4764.833	
	" " 2d " " " (185 ")	3711.00	
	" " 3d " " " (167 ")	4111.333	$12587.166
	Due July 15, '86		$477.417
3.	Principal		$3620.00
	Int. from Jan. 1 to May 1, '86 (4 mo.)		71.41
	Am't of 1st payment on May 1 (71 da.)	$1214.01	
	" " 2d " " " (38 ")	966.00	$2180.01
	Due May 1, '86		$1511.40
4.	Principal		$6860.00
	Int. from Dec. 1, '80, to Sept. 10, '81 (283 da.)		323.56
	Am't of 1st paym't on Sept. 10, '81 (237 da.)	$2702.70	
	" " 2d " " " (164 ")	2054.666	
	" " 3d " " " (121 ")	1632.266	$6389.63
	Due Sept. 10, '81		$793.93
5.	Principal		$8350.00
	Int. from Sept. 23, '85, to May 1, '86 (220 da.)		251.64
	Am't of 1st payment on May 1, '86 (183 da.)	$1845.12	
	" " 2d " " " (121 ")	4472.93	$6318.05
	Due May 1, '86		$2283.59

Art. 544.

1.	Principal	$4800.00
	Int. for 4 yrs	1152.00
	Int. on $288 for 1 yr. × 6	103.68
		$6055.68, *Ans.*

2.	Principal	$6000
	Int. for 6 yrs.	2520
	Int on $420 for 1 yr. × 15	441
		$8961, *Ans.*
3.	Principal	$5656.00
	Int. for 7 yrs	2177.56
	Int. on $311.08 for 1 yr. × 21	359 30
		$8192.86, *Ans*
4.	Principal	$427.50
	Int. for 8 yrs	222.30
	Int. on $27.787 for 1 yr. × 28	50.57
		$700.37, *An*

Art. 548.

1.

$750.00
52.50
$802.50
56.175
$858.675
60.107
$918.782
64.314
$983.096
750.00
$233.096, *Ans.*

2.

$460.00
18.40
$478.40
19.136
$497.536
19.901
$517.437
20.697
$538.134

$538.134
21.525
$559.659
22.886
$582.045
460.00
$122.045, *Ans.*

3.

$1500.00
45.00
$1545.00
46.35
$1591.35
47.74
$1639.09
49.17
$1688.26
1500.00
$188.26, *Ans.*

4.
$350.00
7.00
$357.00
7.14
$364.14
7.282
$371.422
7.428
$378.85
7.577
$386.427, *Ans.*

5.
$148.50
10.395
$158.895
11.122
$170.017
11.901
$181.918
12.734
$194.652
8.402
$203.05, *Ans.*

6.
$735.60
14.712
$750.312
15.006
$765.318
15.306
$780.624

$780.624
15.612
$796.236
15.924
$812.160
16.243
$828.403
16.568
$844.971
16.899
$861.870
17.237
$879.107
16.409
$895.516, *Ans.*

7.
$1200.00
48.00
$1248.00
49.92
$1297.92
51.916
$1349.836
53.993
$1403.829
56.153
$1459.982
23.358
$1483.34, *Ans.*

Art. 549.

1.
$96.00 = Int. 60 da.
48.00 = " 30 "
4 80 = " 3 "
12) 148.80, Int. at 6%.

12) 148.80, Int. at 6%.
12.40
73) 136.40, " " 5½%.
1.869
$134.53, exact int.

2. Int. of \$1 for 2 yrs. 4 mo. 24 da. at $8\frac{1}{2}\%$ = \$.204;
\$1701.36 ÷ .204 = \$8340, *Ans.*

3. Time = 3 yrs. 10 mo. 14 da.

\$18640
$.232\frac{1}{3}$
6) 4330.693, Int. at 6%.
721.782
\$3608.911, " " 5%.
18640.00
\$22248.91, am't.

4. Am't of \$1 for 7 yrs. 5 mo. 21 da. at 6% = \$1.4485;
\$10000 ÷ 1.4485 = \$6903.69, *Ans.*

5.
\$57600
.2095
6) 12067.20, Int. at 6%.
\$2011.20, " " 1%.

(\$68661.60 − \$57600) ÷ \$2011.20 = $5\frac{1}{2}$, the per cent. required.

6. Am't of \$1 at 7% for 5 yrs. 3 mo. 15 days = $\$1.3704\frac{1}{6}$;
$\$2548.975 \div 1.3704\frac{1}{6}$ = \$1860, *Ans.*

7.
\$146000
$.040\frac{5}{6}$
73) \$5961.666
\$81.666, *Ans.*

8.
\$64.00 = Int. 60 da.
16.00 = " 15 "
10.666 = " 10 "
73) 26.666
.365
\$26.30, ex. int. 25 da.

\$6400
.255
\$1632.00
26 30
\$1658.30, *Ans.*

9. Time = 2 yrs. 5 mo. 18 da.
Am't of \$1 = \$1.148;
\$1882.72 ÷ 1.148 = \$1640.

10.
\$6500, 1st principal.
$.029\frac{1}{6}$, 5 mo. 25 da.
\$189.583
6500.00
\$6689.583, 1st amount.
875.00, " payment.
\$5814.583, 2d principal.
$.048\frac{5}{6}$, 9 mo. 23 da.
\$283.945
5814.583
\$6098.528, 2d amount.
1200.000, " payment.
\$4898.528, 3d principal.

$4898.528, 3d principal.
.018$\frac{1}{6}$, 3 mo. 19 da.
$88.989
4898.528
$4987.517, 3d amount.
3750.00, " payment.
$1237.517, 4th principal.

$1237.517, 4th principal.
.1775, 2 yrs. 11 mo. 15 da
219.659
1237.517
$1457.176, *Ans.*

11. Int. of $1 at 7$\frac{1}{2}$% for 3 yrs. 5 mo. 18 da. = $.26;
$477.10 ÷ .26 = $1835, *Ans.*

12. Int. of $4000 at 6% for 1 year = $240;
($4146 − $4000, or $146) ÷ $240 = $\frac{146}{240}$, the time in yrs.
= ($\frac{146}{240} \times 12$) mo. = 7$\frac{3}{10}$ mo. = 7 mo. 9 da., *Ans.*

Art. 553.

1. Am't of $1 at 6% for 1$\frac{1}{2}$ yrs. = $1.09;
$2000 ÷ 1.09 = $1834.86, present worth;
$2000 − $1834.86 = $165.14, discount.

2. Am't of $1 at 5% for 9 mo. = $1.0375;
$3600 ÷ 1.0375 = $3469.879, present worth.

3. Am't of $1 at 6% for 1 yr. 9 mo. = $1.105;
$6780 ÷ 1.105 = $6135.75, present worth.

4. Am't of $6000 at 7% for 2 yrs. = $6840;
" " $1 " 5% " " = $1.10;
$6840 ÷ 1.10 = $6218.18, present worth.

5. Am't of $7500 at 6% for 3 yrs. 4 mo. = $9000;
" " $1 " 5% " " = 1.16\frac{2}{3}$;
$9000 ÷ 1.16\frac{2}{3}$ = $7714.285, present worth.

6. Am't of $1 at 8% for 6 mo. = $1.04;
$9650.80 ÷ 1.04 = $9279.615, present worth;
$9650.80 − $9279.615 = $371.185, discount.

7. Present worth of $7400 = $7400 ÷ 1.06 = $6981.132;
$7000 − $6981.132 = $18.868 in favor of the credit plan.

8. Am't of $3425.60 in 9 mo. at 6% = $3579.752;
$3579.752 ÷ 1.06 = present worth at 8% = $3377.12;
Am't of $3377.12 at 7% for 9 mo. = $3554.42;
$3579.752 − $3554.42 = $25.33, gain.

9. From July 20, '86, to Jan. 8, '87 = 172 days;
Am't of \$1 at 6% for 172 da. = $\$1.028\frac{2}{3}$;
$\$3600 \div 1.028\frac{2}{3}$ = \$3499.68, value July 20.

10. Am't of \$6400 at 6% for 1 yr = \$6784;
" " \$1 " 8% " 6 mo. = \$1.04;
\$6784 ÷ 1.04 = \$6523.08, *Ans.*

Art. 559.

1. Term of discount = 93 da.

\$3600
.0155
6) \$55.80, at 6%.
9.30
\$65,10, at 7% = bank discount;

\$3600 − \$65.10 = \$3534.90, proceeds.

2. Term of discount = 33 da.

\$1375
.0055
\$7.5625, bank discount.

\$1375 − \$7.56 = \$1367.44, proceeds.

3. Term of discount = 4 mo. 3 da.

\$7500
.0205
3) \$153.75, at 6%.
51.25
\$205.00, " 8%.

\$7500 − \$205 = \$7295, proceeds.

4. July 10 to Sept. 5 = 57 da.
93 da. − 57 da. = 36 da., term of discount.

\$1650.80
.006
3) \$9.9048, Int. at *6%*.
3.3016
\$13.206, " " 8% = bank discount.

5. Jan. 2 to Feb. 16 = 45 da.
93 da. − 45 da. = 48 da., term of discount.
$2560.50
.008
12) $20.484, Int. at 6%.
1.707
$18.777, " " 5½% = bank discount.
$2560.50 − $18.78 = $2541.72, proceeds.

6. $7805.60
.07
3) 546.39, Int. 1 yr. at 7%.
40) 182.13, " 4 mo. " "
4.55, " 3 da. " "
$186.68, " 4 m. 3 da. at 7%.
7805.60
$7992.28, Am't at 7%.

Apr. 12 to July 8 = 87 da.,
term of discount.
$7992.28
.0169⅙
135.20, Int. for 87 da. at 7% =
bank discount.
$7992.28
135.20
$7857.08, proceeds.

7. $9375
.08
120) 750.00, Int. for 1 yr.
6.25, " " 3 da.
$756.25, " " 1 yr. 3 da.
9375
$10131.25, Am't " " "

Jan. 7 to July 4 = 178 da.,
term of discount.
$10131.25
.04
90) 405.25, Int. for 180 da.
4.50 " " 2 "
$400.75 " " 178 "

$10131.25
400.75
$9730.50, proceeds.

8. $3675.40
.07
4) $257.28, Int. for 1 yr.
64.32, " " 3 mo.
90) 192.96, " " 9 mo.
2.14, " " 3 da.
$195.10, " " 9 mo. 3 da.
3675.40
$3870.50, Am't for 9 mo. 3 da.
73.75, bank discount,
$3796.75, proceeds.

Apr. 8 to July 15 = 98 da.,
term of discount.
$3870.50
.07
4) 270.94, Int. for 1 yr.
15) 67.74, " " 90 da.
3) 4.51, " " 6 da.
1.50, " " 2 da.
$73.75, bank discount.

Art. 561.

1. Proceeds of \$1 for 63 da. at 6% = \$1.−\$.0105 = \$.9895;
\$2400÷.9895 = \$2425.467, *Ans.*

2. Proceeds of \$1 for 9 mo. 3 da. at 9% = \$1−\$.04575 = \$.95425
\$896÷.95425 = \$938.957, *Ans.*

3. 33 da. = \$.0055, Less $\frac{1}{73} = .0054\frac{18}{73}$,
$\$1-\$.0054\frac{18}{73} = \$.9945\frac{55}{73}$, proceeds of \$1;
$\$3500 \div .9945\frac{55}{73} = \$3519.09$, *Ans.*

4. Jan. 7 to Feb. 27 = 51 da.
93 da. − 51 da. = 42 da., term of discount.
Proceeds of \$1 = \$1−\$.007 = \$.993;
\$1875÷.993 = \$1888.22, *Ans.*

5. Apr. 7 to May 20 = 43 da., term of discount.
Proceeds of $\$1 = \$1 - \$.007\frac{1}{6} = \$.992\frac{5}{6}$;
$\$9260 \div .992\frac{5}{6} = \$9326.84$, *Ans.*

6. Apr. 29 to Oct. 21 = 175 da., term of discount.
Proceeds of $\$1 = \$1-\$.048\frac{11}{18} = \$.951\frac{7}{18}$;
$\$4236 \div .951\frac{7}{18} = \$4452.44$, *Ans.*

7. Term of discount = 1 yr.
Proceeds of \$1 at 9% = \$1−\$.09 = \$.91;
\$3000÷.91 = \$3296.70, face of note.
Am't of \$1 for 1 yr. at 9% = \$1.09;
\$3000 × 1.09 = \$3270, am't of \$3000 same time and rate.
\$3296.70−\$3270 = \$26.70, *Ans.*

8. $\frac{3}{4}\%$ monthly = $\frac{3}{4}\% \times 12 = 9\%$ yearly.
Proceeds of \$1 for 93 da. at 9% = \$1−\$.02325 = \$.97675;
\$2750÷.97675 = \$2815.459, face of note.

9. Term of discount = 248 da. at 6%.
Proceeds of $\$1 = \$1-\$.041\frac{1}{3} = \$.958\frac{2}{3}$;
$\$8375.60 \div \$.958\frac{2}{3} = \$8736.72$, am't of note for 1 yr. 3 da. at 5%
Am't of \$1 for 1 yr. 3 da. at 5% = $\$1.05\frac{1}{24}$.
$\$8736.72 \div 1.05\frac{1}{24} = \$8317.39$, face of note.

10. Term of discount = 63 da.
Proceeds of \$1, at 6% = \$1 − \$.0105 = \$.9895 ;
\$4800 ÷ .9895 = \$4850.93, am't of note for 63 da. at 7%.
Am't of \$1 at 7% for 63 da. = \$1.01225 ;
\$4850.93 ÷ 1.01225 = \$4792.23, face of note.

Art. 570.

1. \$3650 × .0075 = \$27.375, premium ;
\$3650 + \$27.375 = \$3677.38, cost.

2. \$8690 × .005 = \$43.45, discount ;
\$8690 − \$43.45 = \$8646.55, cost.

3. \$4375.50 × .015 = \$65.63, discount ;
\$4375.50 − \$65.63 = \$4309.87, cost.

4. \$7268.40 × .01⅜ = \$99.94, premium ;
\$7268.40 + \$99.94 = \$7368.34, cost.

5. \$6375.80 × .01¼ = \$79.70, premium ;
\$6375.80 + \$79.70 = \$6455.50, cost.

6. \$4640 × .005 = \$23.20, discount ; \$4640 − \$23.20 = \$4616.80, cost.

Art. 572.

1. \$5600 × .0055 = \$30.80, interest ;
\$5600 − \$30.80 = \$5569.20, proceeds ;
\$5600 × .0075 = \$42, premium ;
\$5569.20 + \$42 = \$5611.20, cost.

2. \$6000 × .0155 = \$93, int. at 6% = \$124, int. at 8% ;
\$6000 − \$124 = \$5876, proceeds ; \$6000 × .015 = \$90, discount
\$5876 − \$90 = \$5786, cost.

3. \$8320 × .0105 = \$87.36, interest ;
\$8320 − \$87.36 = \$8232.64, proceeds ;
\$8320 × .0125 = \$104, premium ;
\$8232.64 + \$104 = \$8336.64, cost.

4. \$12620 × .0155 = \$195.61, interest ;
\$12620 − \$195.61 = \$12424.39, proceeds :
\$12620 × .0175 = \$220.85, premium ;
\$12424.39 + \$220.85 = \$12645.24, cost.

5. **$7560 × .0055 = $41.58, interest;**
$7560 − $41.58 = $7518.42, proceeds;
$7560 × .005 = $37.80, discount;
$7518.42 − $37.80 = $7480.62, cost.

Art. 574.

1. **$1, discounted at 6% for 93 days = $1 − $.0155**
= $.9845, proceeds;
$.9845 + $.0075 premium = $.992, cost of $1;
$1200 ÷ .992 = $1209.677, face.

2. **$1, discounted at 6% for 93 days = $1 − .0105**
= .$9895, proceeds;
$.9895 − $.0075 discount = .982, cost of $1;
$5630 ÷ .982 = $5733.197, ***Ans.***

3. **$1 − $.0135 = $.9875, cost of $1;**
$329.75 ÷ .9875 = $333.92, face.

4. **$1 + $.005 = $1.005, cost of $1; $964.80 ÷ 1.005 = $960, face.**

5. **$1 discounted at 8% for 33 days = $1 − $.0073⅓**
= $.9926⅔, proceeds;
$.9926⅔ − $.0175 discount = $.9751⅔, cost of $1;
$3200 ÷ .9751⅔ = $3281.49, face.

Art. 579.

1.

$$\begin{array}{rcl} 4\times 500 & = & 2000 \\ 9\times \underline{800} & = & \underline{7200} \\ 13\cancel{00} &) & \underline{92\cancel{00}} \\ & & 7\frac{1}{18} \end{array}$$

In $7\frac{1}{18}$ mo. = 7 mo. 2 da., ***Ans.***

2.

$$\begin{array}{rcl} 3\times 800 & = & 2400 \\ 5\times 1200 & = & 6000 \\ 9\times \underline{1600} & = & \underline{14400} \\ 36\cancel{00} &) & \underline{228\cancel{00}} \\ & & 6\frac{1}{3} \end{array}$$

6 mo. 10 da. from Apr. 1
= Oct. 10, ***Ans.***

3.

$$\begin{array}{rcl} 30\times 600 & = & 18000 \\ 60\times 900 & = & 54000 \\ 90\times \underline{1500} & = & \underline{135000} \\ 3\cancel{000} &) & \underline{207\cancel{000}} \\ & & 69 \end{array}$$

69 da. from June 15 = Aug. 23, ***Ans.***

4.

$$\begin{array}{rcl} 9\times 3000 & = & 27000 \\ 12\times 5000 & = & 60000 \\ 15\times \underline{8000} & = & \underline{120000} \\ 16\cancel{000} &) & \underline{207\cancel{000}} \\ & & 12\frac{15}{16} \end{array}$$

$12\frac{15}{16}$ mo. = 12 mo. 28 da. from
Jan. 1, '86 = Jan. 29, '87, ***Ans.***

5.

$875	due	Feb.	5	$0 \times 875 = 0$
1250	"	Mch.	27	$50 \times 1250 = 62500$
1860	"	May	11	$95 \times 1860 = 176700$
				$3985\ )\ 239200$
				60

60 days from Feb. 5 = April 6, 1886, *Ans.*

6.

$1650	due	July	4	$0 \times 1650 = 0$
2040	"	"	23	$19 \times 2040 = 38760$
1865	"	Aug.	11	$38 \times 1865 = 70870$
1480	"	"	25	$52 \times 1480 = 76960$
				$7035\ )\ 186590$
				27

27 da. after July 4 = July 31, 1886, *Ans.*

7.

$875	due	Feb.	13	$0 \times 875 = 0$
930	"	Mch.	23	$38 \times 930 = 35340$
1800	"	May	21	$97 \times 1800 = 174600$
3600	"	July	19	$156 \times 3600 = 561600$
				$7205\ )\ 771540$
				107

107 da. after Feb. 13 = May 31, 1886. *Ans.*

8.

$$\begin{array}{rcr} 0 \times 1000 & = & 0 \\ 3 \times 2000 & = & 6000 \\ 9 \times 2500 & = & 22500 \\ 21 \times \underline{1250} & = & \underline{26250} \\ 6750 & &)\ \underline{54750} \end{array}$$

$8\frac{1}{9}$, No. of mo.

$8\frac{1}{9}$ mo. = 8 mo. 3 da., *Ans.*

9.

$275	due	Feb.	6	$0 \times 275 = 0$
960	"	Apr.	16	$69 \times 960 = 66240$
1375	"	May	27	$110 \times 1375 = 151250$
1060	"	"	18	$101 \times 1060 = 107060$
				$3670\ )\ 324550$
				88

88 da. after Feb. 6 = May 5, 1886, *Ans.*

Art. 580.

2. Feb. 1, 1886, date of reference.

$900 due Apr. 5
1200 " May 20
1800 " Aug. 27
1200 " June 30

$$\begin{array}{rcrcr}
63 & \times & 900 & = & 56700 \\
108 & \times & 1200 & = & 129600 \\
207 & \times & 1800 & = & 372600 \\
149 & \times & \underline{1200} & = & \underline{178800} \\
 & & 5100 & & 737700 \\
 & & \underline{4400} & & \underline{413600} \\
 & & 7\cancel{00} &) & \underline{3241\cancel{00}} \\
 & & & & 463
\end{array}$$

$$\begin{array}{rcrcr}
0 & \times & 700 & = & 0 \\
24 & \times & 1000 & = & 24000 \\
143 & \times & 2200 & = & 314600 \\
150 & \times & \underline{500} & = & \underline{75000} \\
 & & 4400 & & 413600
\end{array}$$

Cash balance = $700.
463 da. from Feb. 1, '86
= May 10, '87, *Ans*

3. May 20, 1882, date of reference.

$800 due June 30
1600 " July 15
1500 " Sept. 23
2000 " Oct. 12

$$\begin{array}{rcrcr}
41 & \times & 800 & = & 32800 \\
56 & \times & 1600 & = & 89600 \\
126 & \times & 1500 & = & 189000 \\
145 & \times & \underline{2000} & = & \underline{290000} \\
 & & 5900 & & 601400 \\
 & & \underline{5100} & & \underline{291100} \\
 & & 800 &) & \underline{310300} \\
 & & & & 388
\end{array}$$

$$\begin{array}{rcrcr}
0 & \times & 2000 & = & 0 \\
41 & \times & 500 & = & 20500 \\
82 & \times & 1200 & = & 98400 \\
123 & \times & \underline{1400} & = & \underline{172200} \\
 & & 5100 & & 291100
\end{array}$$

Cash balance = $800.
388 da. after May 20, '82
= June 12, '83, *Ans.*

4. June 1, 1878, date of reference.

$2000 due July 30
3000 " Aug. 20
4000 " Sept. 13
5000 " Oct. 28
6000 " Sept. 9

$$\begin{array}{rcrcr}
59 & \times & 2000 & = & 118000 \\
80 & \times & 3000 & = & 240000 \\
104 & \times & 4000 & = & 416000 \\
149 & \times & 5000 & = & 745000 \\
100 & \times & \underline{6000} & = & \underline{600000} \\
 & & 20000 & & 2119000 \\
 & & \underline{17000} & & \underline{952000} \\
 & & 3\cancel{000} &) & \underline{1167\cancel{000}} \\
 & & & & 389
\end{array}$$

$$\begin{array}{rrcr} 0\times & 4000 & = & 0 \\ 19\times & 6000 & = & 114000 \\ 90\times & 1000 & = & 90000 \\ 106\times & 4000 & = & 424000 \\ 162\times & 2000 & = & 324000 \\ \hline & 17000 & & 952000 \end{array}$$

Cash balance = $3000.

389 da. after June 1, '78.

= June 25, '79, *Ans.*

5. Nov. 1, 1880, date of reference.

$600 due Jan. 8, '81.
900 " Dec. 31, '80.
1500 " " 15, "
1200 " Feb. 18, '81.
1800 " " 14, "

$$\begin{array}{rrcr} 68\times & 600 & = & 40800 \\ 60\times & 900 & = & 54000 \\ 44\times & 1500 & = & 66000 \\ 109\times & 1200 & = & 130800 \\ 105\times & 1800 & = & 189000 \\ \hline & 6000 & & 480600 \\ & 5100 & & 352200 \\ \hline & 9\cancel{0}\cancel{0} &) & 1284\cancel{0}\cancel{0} \\ & & & 143 \end{array}$$

$$\begin{array}{rrcr} 0\times & 500 & = & 0 \\ 28\times & 1000 & = & 28000 \\ 49\times & 1000 & = & 49000 \\ 110\times & 1400 & = & 154000 \\ 101\times & 1200 & = & 121200 \\ \hline & 5100 & & 352200 \end{array}$$

Cash balance, $900.

143 da. from Nov. 1, '80

= March 24, '81, *Ans.*

6. July 20, 1884, date of reference.

$860 due Aug. 9
1540 " Oct. 14
600 " Dec. 19
820 " " 24
1240 " " 30

$$\begin{array}{rrcr} 20\times & 860 & = & 17200 \\ 86\times & 1540 & = & 132440 \\ 152\times & 600 & = & 91200 \\ 157\times & 820 & = & 128740 \\ 163\times & 1240 & = & 202120 \\ \hline & 5060 & & 571700 \\ & 4279 & & 382644 \\ \hline & 781 &) & 189056 \\ & & & 242 \end{array}$$

$$\begin{array}{rrcr} 0\times & 500 & = & 0 \\ 36\times & 1979 & = & 71244 \\ 133\times & 500 & = & 66500 \\ 169\times & 600 & = & 101400 \\ 205\times & 700 & = & 143500 \\ \hline & & & 382644 \end{array}$$

Cash balance, $781.

242 da. from July 20, '84

= March 19, '85, *Ans.*

Art. 599.

Note.—Cancellation in these examples has been omitted, but the pupil should be required to perform it.

1. $x = \frac{14 \times 9}{6} = 21.$

2. $x = \frac{100 \times 12}{15} = 80.$

3. $x = \frac{35 \times 14}{70} = 7.$

4. $x = \frac{154 \times 6}{84} = 11.$

5. $x = \frac{15 \times 65}{195} = 5.$

6. $x = \frac{5.2 \times 44.1}{3.64} = 63.$

7. $x = \frac{4.45 \times 1.38}{1.15} = 5.34.$

8. $x = \frac{\$17 \times 55}{44} = \$\frac{85}{4} = \$21.25.$

9. $x = \frac{39 \times \$5.26}{\$7.89} = 26.$

10. $x = \frac{4\frac{1}{4} \times \frac{3}{4}}{1\frac{1}{2}} = \frac{17}{4} \times \frac{3}{4} \times \frac{2}{3} = \frac{17}{8}$
$= 2\frac{1}{8}.$

11. $x = \frac{\frac{2}{3} \times 49\frac{1}{2}}{55} = \frac{2}{3} \times \frac{99}{2} \times \frac{1}{55} = \frac{3}{5}.$

12. $x = \frac{8.37 \times \frac{2}{9}}{4.65} = 8.37 \times \frac{2}{9} \times \frac{1}{4.65}$
$= \frac{2}{5} = .4.$

13. $x = \frac{5\frac{1}{3} \times 9}{4} = \frac{16}{3} \times 9 \times \frac{1}{4} = 12.$

14. $x = \frac{85 \times 144}{120} = 102.$

15. $x = \frac{\$9.20 \times 217}{161} = \$12.40.$

16. $x = \frac{\frac{2}{3} \times \frac{9}{10}}{\frac{3}{4}} = \frac{2}{3} \times \frac{9}{10} \times \frac{4}{3} = \frac{4}{5}.$

17. $x = \frac{14.3 \times 5.5}{6.5} = 12.1.$

18. $x = \frac{7.50 \times \$5.70}{9.50} = \$4.50.$

19. $x = \frac{28\frac{4}{5} \times 27\frac{6}{7}}{22\frac{2}{7}} = \frac{144}{5} \times \frac{195}{7} \times \frac{7}{156}$
$= 36.$

20. $x = \frac{46\frac{2}{3} \times 16.8}{22.4}$
$= \frac{140}{3} \times 16.8 \times \frac{1}{22.4} = 35.$

Art. 600.

1. 5 : 18 :: \$36 : x.
$x = \frac{18 \times 36}{5} = \frac{648}{5} = \$129.60.$

2. 12 : 15 :: 32 : x.
$x = \frac{15 \times 32}{12} = 40$ days.

3. \$45 : \$75 :: 18 : x.
$x = \frac{18 \times 75}{45} = 30$ bbl.

4. 7 : $9\frac{1}{2}$ :: 315 : x.
$x = \frac{9\frac{1}{2} \times 315}{7} = \frac{19}{2} \times 315 \times \frac{1}{7}$
$= \frac{855}{2} = 427\frac{1}{2}$ miles.

5. $15 : 65 :: \$987.30 : x.$

$$x = \frac{987.30 \times 65}{15} = \$4278.30.$$

6. $8 : 15\tfrac{1}{2} :: 264 : x.$

$$x = \frac{15\frac{1}{2} \times 264}{8} = \tfrac{1023}{2}$$

$$= 511\tfrac{1}{2} \text{ mi.}$$

7. $19 : 12 :: \$589 : x.$

$$x = \frac{589 \times 12}{19} = \$372.$$

8. $11 : 23 :: 253 : x.$

$$x = \frac{23 \times 253}{11} = 529 \text{ miles.}$$

9. $\$75 : \$95 :: \$6 : x.$

$$x = \frac{6 \times 95}{75} = \$7.60.$$

10. $9 : 15 :: 24 : x.$

$$x = \frac{15 \times 24}{9} = 40 \text{ wks.}$$

11. $12 : 18 :: 8 : x.$

$$x = \frac{18 \times 8}{12} = 12 \text{ da.}$$

12. $100 : 196 :: 25 : x.$

$$x = \frac{25 \times 196}{100} = 49 \text{ da.}$$

13. $105 : 165 :: 35 : x.$

$$x = \frac{35 \times 165}{105} = 55 \text{ da.}$$

14. $25 : 41 :: \$31.25 : x.$

$$x = \frac{31.25 \times 41}{25} = \$51.25.$$

15. $12 : 27 :: \$5730 : x.$

$$x = \frac{5730 \times 27}{12} = \$12892.50.$$

16. $120 : 150 :: 96 : x.$

$$x = \frac{96 \times 150}{120} = 120 \text{ ft.}$$

17. $15 : 36 :: 25 : x.$

$$x = \frac{36 \times 25}{15} = 60 \text{ boys.}$$

18. $25 : 60 :: 40 : x.$

$$x = \frac{60 \times 40}{25} = 96 \text{ bu.}$$

19. $\$7902.50 : \$5232 :: 145 : x.$

$$x = \frac{5232 \times 145}{7902.50} = 96 \text{ acres.}$$

Art. 602.

1. $\left.\begin{array}{r} 4 : 3 \\ 150 : 320 \end{array}\right\} :: 25 : x.$

$$x = \frac{3 \times 320 \times 25}{4 \times 150} = 40 \text{ men.}$$

2. $\left.\begin{array}{r} 5 : 8 \\ 24 : 50 \end{array}\right\} :: 7.5 : x.$

$$x = \frac{8 \times 50 \times 7.5}{5 \times 24} = 25 \text{ lb.}$$

3. $\left.\begin{array}{r} 6 : 8 \\ 15 : 18 \\ 500 : 800 \end{array}\right\} :: \$37.50 : x.$

$$x = \frac{8 \times 18 \times 800 \times 37.50}{6 \times 15 \times 500} = \$96.$$

4. $\left.\begin{array}{r} 12 : 15 \\ 4 : 5 \\ 3 : 6 \end{array}\right\} :: \$12 : x.$

$$x = \frac{15 \times 5 \times 6 \times 12}{12 \times 4 \times 3} = \$37\tfrac{1}{2}.$$

5. $\left.\begin{matrix} 5 : 8 \\ 12 : 20 \end{matrix}\right\} :: \$25 : x.$

$$x = \frac{8 \times 20 \times 25}{5 \times 12} = \$66\tfrac{2}{3}.$$

6. $\left.\begin{matrix} 150 : 275 \\ 900 : 1200 \\ 100 : 150 \end{matrix}\right\} :: \$250 : x.$

$$x = \frac{275 \times 1200 \times 150 \times 250}{150 \times 900 \times 100}$$
$$= \$916\tfrac{2}{3}.$$

7. $\left.\begin{matrix} 160 : 90 \\ 60 : 40 \end{matrix}\right\} :: \$75 : x.$

$$x = \frac{90 \times 40 \times 75}{160 \times 60} = \$28.12\tfrac{1}{2}.$$

8. $\left.\begin{matrix} 160 : 250 \\ 1875 : 2500 \end{matrix}\right\} :: \$35 : x.$

$$x = \frac{250 \times 2500 \times 35}{160 \times 1875} = \$72.91\tfrac{2}{3}.$$

9. $\left.\begin{matrix} 8 : 16 \\ 15 : 12 \end{matrix}\right\} :: \$690 : x.$

$$x = \frac{16 \times 12 \times 690}{8 \times 15} = \$1104.$$

10. $\left.\begin{matrix} 2 : 6 \\ 1\tfrac{1}{2} : 4\tfrac{1}{2} \\ 1 : 2 \end{matrix}\right\} :: 465 : x.$

$$x = \frac{6 \times 4\tfrac{1}{2} \times 2 \times 465}{2 \times 1\tfrac{1}{2} \times 1} = 8370 \text{ lb}$$

Art. 604.

1. $5 : 12 :: \$165 : x.$

$$x = \frac{12 \times 165}{5} = \$396.$$

2. $18 : x :: 4 : 15.$

$$x = \frac{15 \times 18}{4} = 67\tfrac{1}{2} \text{ bu.}$$

3. $\$8756 : \$12375 :: \$1313.40 : x.$

$$x = \frac{12375 \times 1313.40}{8756}$$
$$= \$1856.25.$$

4. $4\tfrac{3}{4} : 9\tfrac{4}{5} :: \$59.85 : x.$

$$x = \frac{9\tfrac{4}{5} \times 59.85}{4\tfrac{3}{4}}$$
$$= \tfrac{49}{5} \times 59.85 \times \tfrac{4}{19} = \$123.48.$$

5. $12.5 : 11.75 :: \$562.50 : x.$

$$x = \frac{11.75 \times 562.50}{12.5} = \$528.75.$$

6. $\left.\begin{matrix} 15 : 24 \\ 8\tfrac{1}{2} : 8\tfrac{1}{2} \end{matrix}\right\} :: 38.75 : x.$

$$x = \frac{24 \times 38.75}{15} = 62 \text{ perches.}$$

7. $\$5750 : \$11875 :: \$875 : x.$

$$x = \frac{11875 \times 875}{5750} = \$1807.07.$$

8. $15\tfrac{3}{4} : x :: 480\tfrac{3}{8} : 610.$

$$x = \frac{15\tfrac{3}{4} \times 610}{480\tfrac{3}{8}} = \tfrac{63}{4} \times 610 \times \tfrac{8}{3843}$$
$$= 20 \text{ days.}$$

9. $\left.\begin{matrix} x : 75 \\ 10 : 9 \\ 15 : 12 \end{matrix}\right\} :: \left\{\begin{matrix} 160 : 120. \\ 40 : 30. \\ 3 : 2. \end{matrix}\right.$

$$x = \frac{75 \times 9 \times 12 \times 160 \times 40 \times 3}{10 \times 15 \times 120 \times 30 \times 2}$$
$$= 144 \text{ men.}$$

10. $\left.\begin{matrix}10:7\\14:x\end{matrix}\right\}::5.65:11.3.$

$$x=\frac{10\times14\times11.3}{7\times5.65}=40\text{ wks.}$$

11. $\left.\begin{matrix}12:16\\8:\ \ 9\\10:\ \ x\end{matrix}\right\}::340:204.$

$$x=\frac{12\times8\times10\times204}{16\times9\times340}=4\text{ days.}$$

12. $\left.\begin{matrix}175:125\\2:\ \ 2\frac{1}{2}\end{matrix}\right\}::\$280:x.$

$$x=\frac{125\times2\frac{1}{2}\times280}{175\times2}=\$250.$$

13. $\left.\begin{matrix}15:18\\12:\ \ x\\10:\ \ 9\end{matrix}\right\}::\left\{\begin{matrix}160:180.\\10:\ \ 12.\end{matrix}\right.$

$$x=\frac{15\times12\times10\times180\times12}{18\times9\times160\times10}$$
$$=15\text{ days.}$$

Art. 610.

1. $\$8000+\$9000=\$17000$ in all.

$17:8::\$3400:$ A's share $=\$1600.$
$17:9::\$3400:$ B's “ $=\$1800.$

2. $\$15000+\$18000+\$25000=\$58000.$

$58:15::\$11600:$ A's share $=\$3000.$
$58:18::\$11600:$ B's “ $=\$3600.$
$58:25::\$11600:$ C's “ $=\$5000.$

3. $\$100000-(\$23000+\$37000)=\$40000$, C.

$100:23::\$18700:$ A's share $=\$4301.$
$100:37::\$18700:$ B's “ $=\$6919.$
$100:40::\$18700:$ C's “ $=\$7480.$

4. $375+425+475=1275.$

$1275:375::\$204:$ share of 1st $=\$60.$
$1275:425::\$204:$ “ “ 2d $=\$68.$
$1275:475::\$204:$ “ “ 3d $=\$76.$

5. $\$8000+\$10000+\$12000=\$30000.$

$30:\ 8::\$6000:$ A's share $=\$1600.$
$30:10::\$6000:$ B's “ $=\$2000.$
$30:12::\$6000:$ C's “ $=\$2400.$

Art. 612.

1.	$\$6000 \times 6 = \$36000$	$190 : 36 :: \$9500 : 1\text{st} = \$1800.$
	$\$8000 \times 8 = 64000$	$190 : 64 :: \$9500 : 2\text{d} = \$3200.$
	$\$9000 \times 10 = 90000$	$190 : 90 :: \$9500 : 3\text{d} = \$4500.$
	$\$190000$	
2.	$\$20000 \times 10 = \$200000$	$92 : 20 :: \$18400 : \text{A's} = \$4000.$
	$\$25000 \times 12 = \$300000$	$92 : 30 :: \$18400 : \text{B's} = \$6000.$
	$\$30000 \times 14 = \$420000$	$92 : 42 :: \$18400 : \text{C's} = \$8400.$
	$\$920000$	
3.	$35 \times 8 = 280$	$885 : 280 :: \$12000 : \text{A's} = \$3796.61.$
	$45 \times 9 = 405$	$885 : 405 :: \$12000 : \text{B's} = \$5491.53.$
	$20 \times 10 = 200$	$885 : 200 :: \$12000 : \text{C's} = \$2711.86.$
	885	
4.	$\left.\begin{array}{r}\$8000 \times 4\\ \$13000 \times 8\end{array}\right\} = \$136000$	$338 : 136 :: \$6760 : \text{M's} = \$2720.$
	$\left.\begin{array}{r}\$10000 \times 6\\ \$5000 \times 6\end{array}\right\} = 90000$	$338 : 90 :: \$6760 : \text{N's} = \$1800.$
	$\left.\begin{array}{r}\$12000 \times 8\\ \$4000 \times 4\end{array}\right\} = 112000$	$338 : 112 :: \$6760 : \text{R's} = \$2240.$
	$\$338000$	
5.	$300 \times 5 = 1500$	$42 : 15 :: \$420 : \text{A's} = \$150.$
	$450 \times 6 = 2700$	$42 : 27 :: \$420 : \text{B's} = \$270.$
	4200	

Art. 628.

1. $20^2 + (2 \times 20 \times 5) + 5^2 = 400 + 200 + 25 = 625.$
$30^2 + (2 \times 30 \times 6) + 6^2 = 900 + 360 + 36 = 1296.$
$40^2 + (2 \times 40 \times 5) + 5^2 = 1600 + 400 + 25 = 2025.$
$60^2 + (2 \times 60 \times 4) + 4^2 = 3600 + 480 + 16 = 4096.$
$90^2 + (2 \times 90 \times 3) + 3^2 = 8100 + 540 + 9 = 8649.$
$90^2 + (2 \times 90 \times 8) + 8^2 = 8100 + 1440 + 64 = 9604.$

2. $30^2 + (2 \times 30 \times 8) + 8^2 = 900 + 480 + 64 = 1444.$
$40^2 + (2 \times 40 \times 9) + 9^2 = 1600 + 720 + 81 = 2401.$
$60^2 + (2 \times 60 \times 9) + 9^2 = 3600 + 1080 + 81 = 4761.$
$70^2 + (2 \times 70 \times 8) + 8^2 = 4900 + 1120 + 64 = 6084.$
$80^2 + (2 \times 80 \times 9) + 9^2 = 6400 + 1440 + 81 = 7921.$
$90^2 + (2 \times 90 \times 8) + 8^2 = 8100 + 1440 + 64 = 9604.$

Art. 630.

1.
20′25 | 45
16
85 | 425
425

2.
40′96 | 64
36
124 | 496
496

3.
73′96 | 86
64
166 | 996
996

4.
28′09 | 53
25
103 | 309
309

5.
90′25 | 95
81
185 | 925
925

6.
75′69 | 87
64
167 | 1169
1169

7.
44′89 | 67
36
127 | 889
889

8.
59′29 | 77
49
147 | 1029
1029

9.
1′56′25 | 125
1
22 | 56
44
245 | 1225
1225

10.
1′16′64 | 108
1
208 | 1664
1664

11.
18′23′29 | 427
16
82 | 223
164
847 | 5929
5929

12.
31′92′25 | 565
25
106 | 692
636
1125 | 5625
5625

13.
25′90′81 | 509
25
1009 | 9081
9081

14.
16′22′47′84 | 4028
16
802 | 2247
1604
8048 | 64384
64384

15. 35′89′20′81 | 5991
25
109 | 1089
981
1189 | 10820
10701
11981 | 11981
11981

16. 37′14.90′25 | 60.95
36
1209 | 11490
10881
12185 | 60925
60925

17. 42′60.85′4 | 65.2752 +
36
125 | 660
625
1302 | 3585
2604
13047 | 98140
91329
130545 | 681100
652725
1305502 | 2837500
2611004

18. 30.62′56′2 | 5.53404 +
25
105 | 562
525
1103 | 3756
3309
11064 | 44720
44256
1106804 | 4640000
4427216

19. 8.69′25′86′5 | 2.9483 +
4
49 | 469
441
584 | 2825
2336
5888 | 48986
47104
58963 | 188250
176889

20. 4′29 68′47′5 | 20.7288 +
4
407 | 2968
2849
4142 | 11947
8284
41448 | 366350
331584
414568 | 3476600
3316544

21. .00′42′25 | .065
36
125 | 625
625

22. .01′56′25 | .125
1
22 | 56
44
245 | 1225
1225

23. .04′20′25 | .205
4
405 | 2025
2025

24.

	1′62.20′25	12.7358+
	1	
22	62	
	44	
247	1820	
	1729	
2543	9125	
	7629	
25465	149600	
	127325	
254708	2227500	
	2037664	

Art. 635.

1.

	5′832	18
	1	
300	4832	
240		
64		
604	4832	

2.

	6′859	19
	1	
300	5859	
270		
81		
651	5859	

3.

	9′261	21
	8	
1200	1261	
60		
1		
1261	1261	

4.

	29′791	31
	27	
2700	2791	
90		
1		
2791	2791	

5.

	13′824	24
	8	
1200	5824	
240		
16		
1456	5824	

6.

	17′576	26
	8	
1200	9576	
360		
36		
1596	9576	

7.
32′768 | 32
27
2700 | 5768
180
4
2884 | 5768

8.
50′653 | 37
27
2700 | 23653
630
49
3379 | 23653

9.
97′336 | 46
64
4800 | 33336
720
36
5556 | 33336

10.
74′088 | 42
64
4800 | 10088
240
4
5044 | 10088

11.
205.379 | 5.9
125
7500 | 80379
1350
81
8931 | 80379

12.
614.125 | 8.5
512
19200 | 102125
1200
25
20425 | 102125

13.
.373′248 | .72
343
14700 | 30248
420
4
15124 | 30248

14.
9′938′375 | 215
8
1200 | 1938
60
1
1261 | 1261
132300 | 677375
3150
25
135475 | 677375

15.
4′492.125 | 16.5
1
300 | 3492
180
36
516 | 3096
76800 | 396125
2400
25
79225 | 396125

16.	8.615′125	2.05
	8	
1200	615	
120000	615125	
3000		
25		
123025	615125	

17.	907′039′232	968
	729	
24300	178039	
1620		
36		
25956	155736	
2764800	22303232	
23040		
64		
2787904	22303232	

18.	890′277′128	962
	729	
24300	161277	
1620		
36		
25956	155736	
2764800	5541128	
5760		
4		
2770564	5541128	

19.	521.660′125	8.05
	512	
19200	9660	
1920000	9660125	
12000		
25		
1932025	9660125	

20.	1′758.416′743	12.07
	1	
300	758	
60		
4		
364	728	
43200	30416	
4320000	30416743	
25200		
49		
4345249	30416743	

21.	9.234′565′192	2.098
	8	
1200	1234	
120000	1234565	
5400		
81		
125481	1129329	
13104300	105236192	
50160		
64		
13154524	105236192	

22.	2	1.259 +
	1	
300	1000	
60		
4		
364	728	
43200	272000	
1800		
25		
45025	225125	
4687500	46875000	
33750		
81		
4721831	42491979	

23.

	3	1.442+
	1	
300	2000	
120		
16		
436	1744	
58800	256000	
1680		
16		
60496	241984	
6220800	14016000	
8640		
4		
6229444	12458888	

25.

	12'167	23
	8	
1200	4167	
180		
9		
1389	4167	

	35'937	33
	27	
2700	8937	
270		
9		
2979	8937	

23 + 33 = 56, *Ans.*

26.

	857.375	9.5
	729	
24300	128375	
1350		
25		
25675	128375	

	274.625	6.5
	216	
10800	58625	
900		
25		
11725	58625	

9.5 − 6.5 = 3, *Ans.*

Art. 636.

1. $\sqrt{15625} = 125$, No. yds. on a side;
$125 \times 4 = 500$, No. yds. around;
$\$1.75 \times 500 = \$875$, cost of fence.

2. 124.25625 acres = 12425625 sq. l.;
$\sqrt{12425625} = 3525$, No. links on a side.

3. $40960 \div 10 = 4096$; $\sqrt{4096} = 64$, No. ft. in length.

4. 3750 sq. ft. $\div 6 = 625$ sq. ft.. area of 1 face;
$\sqrt{625} = 25$, No. ft. on a side.

5. $4050 \div 2 = 2025$, No. sq. ft. in half of ceiling;
$\sqrt{2025} = 45$, No. of feet in width,
$45 \times 2 = 90$, " " " length.

6. $\sqrt[3]{13824} = 24$, No. ft. on a side.

7. $\sqrt[3]{5832} = 18$, No. ft. in depth.

8. $\sqrt[3]{2744} = 14$, No. ft. square and deep;
$14 \times 14 = 196$, No. sq. ft. on each side and bottom;
$196 \times 5 = 980$, No. sq. ft. in all;
$\$.75 \times 960 = \$735$, cost of lining.

9. $46875 \div 3 = 15625$, No. cu. ft. in $\frac{1}{3}$ of volume;
$\sqrt[3]{15625} = 25$, the No. ft. high and wide;
25 ft. $\times 3 = 75$ ft. in length.

10. 112 cu. ft. $\div 28 = 4$ cu. ft., volume of a section 1 foot in length.
Hence, the timber is 2 ft. or 24 in. square.

11. $(108 \times 2) + (48 \times 2) = 312$ rds. around rectangle;
$\$1.25 \times 312 = \$390$, cost to fence.
$\sqrt{108 \times 48} = \sqrt{5184} = 72$, No. rds. on side of square;
72 rds. $\times 4 = 288$ rds. around square;
$\$1.25 \times 288 = \$360$, cost to fence.
$\$390 - \$360 = \$30$ difference.

12. $\sqrt[3]{32 \times 24 \times 18} = \sqrt[3]{13824} = 24$, No. in. in height.

13. $\sqrt[3]{36 \times 16 \times 3} = \sqrt[3]{1728} = 12$, No. in. on edge of cube.

Art. 646.

2. $\sqrt{105^2 - 63^2} = \sqrt{7056} = 84$, *Ans.*

3. $\sqrt{25^2 + 100^2} = \sqrt{10625} = 103.07+$ ft., *Ans.*

4. $\sqrt{35^2 - 12^2} = \sqrt{1081} = 32.87+$ ft., *Ans.*

5. $\sqrt{20^2 + 18^2} = \sqrt{724} = 26.907+$ mi., *Ans.*

6. $\sqrt{65^2 + 45^2} = \sqrt{6250} = 79.056+$ ft., am't broken off;
65 ft. + 79.056 + ft. = 144.056 + ft. length of pole.

7. $\sqrt{20^2 - 15^2} = \sqrt{175} = 13{,}228+$ ft., *Ans.*

8. $\sqrt{25^2 + 30^2} = \sqrt{1525} = 39.05+$ ft., *Ans.*

9. $\sqrt{28^2 + 23^2} = \sqrt{1313} = 36.235+$ rds.
(28 + 23) rds. − 36.235 + rds. = 14.764 + rds., *Ans.*

10. $\sqrt{140^2 + 90^2} = \sqrt{27700} = 166.43+$ ft., *Ans.*

Art. 649.

2. $\frac{60 \times 35}{2} = 1050$, area in sq. rds.

3. $\frac{90 \times 48}{2} = 2160$, area in sq. rds. $= 13\frac{1}{2}$ A.

4. $\frac{60 \times 95}{2} = 2850$, area in sq. ch. $= 285$ A.

5. $\frac{56 \times 14\frac{2}{3}}{2} = 410\frac{2}{3}$, area in sq. ft.

6. $\frac{60 \times 45}{2} = 1350$, area in sq. rds.

Art. 651.

2. $\frac{24+32+40}{2} = 48$; $\quad 48 - \begin{cases} 24 = 24, \\ 32 = 16, \\ 40 = \ \ 8; \end{cases}$

$\sqrt{48 \times 24 \times 16 \times 8} = \sqrt{147456} = 384$, area in sq. rds.

3. $\frac{60+80+100}{2} = 120$; $\quad 120 - \begin{cases} 60 = 60, \\ 80 = 40, \\ 100 = 20; \end{cases}$

$\sqrt{120 \times 60 \times 40 \times 20} = \sqrt{5760000} = 2400$, area in sq. rds.

4. $\frac{65+75+85}{2} = 112.5;\qquad 112.5 - \left\{\begin{array}{l} 65 = 47.5, \\ 75 = 37.5, \\ 85 = 27.5; \end{array}\right.$

$$\sqrt{112.5 \times 47.5 \times 37.5 \times 27.2} = \sqrt{5510742.1875}$$
$$= 2347.497, \text{ area in sq. rds.}$$
$$\$160 \times \frac{2347.497}{160} = \$2347.50, \textit{ Ans.}$$

5. $\frac{30+40+50}{2} = 60;\qquad 60 - \left\{\begin{array}{l} 30 = 30, \\ 40 = 20, \\ 50 = 10; \end{array}\right.$

$$\sqrt{60 \times 30 \times 20 \times 10} = \sqrt{360000} = 600, \text{ area in sq. ch.} = 60 \text{ acres.}$$

Art. 658.

2. $90 \times 60 = 5400$, area in sq. ft.

3. $60.8 \times 18.5 = 1124.80$, area in sq. rds. $= 7.03$ acres.

4. $87.5 \times 37.5 = 3281.25$, area in sq. ch. $= 328.125$ acres.

5. $(160 \times 200) - (60 \times 40) = 29600$, area in sq. ft.

6. $\sqrt{110^2 - 66^2} = \sqrt{7744} = 88$, No. rds. long;
$88 \times 66 = 5808$, area in sq. rds. $= 36.3$ acres, at \$85 an acre
$= \$3085.50$, *Ans.*

Art. 660.

2. $\frac{65+40.8}{2} = 52.9;$

$52.9 \times 20.5 = 1084.45$, area in sq. rds. $= 6.777+$ acres, *Ans.*

3. $\frac{30.5+45.5}{2} = 38;$

$38 \times 18.5 = 703$, area in sq. ch. $= 70.3$ acres, *Ans.*

4. $\frac{22.4+35.2}{2} = 28.8;$

$28.8 \times 6.4. = 184.32$, area in sq. rds. $= 1.152$ acres at \$160 an acre
$= \$184.32$, *Ans.*

5. $\frac{36+18}{2}\times 18 = 396$, area in sq. rds. of one,

$\frac{31+13}{2}\times 18 = 486$, " " other,

882, " " both,

882 sq. rds. = 5.5125 acres, *Ans.*

Art. 662.

2. $\frac{55+65+90}{2} = 105$; $105 - \begin{cases} 55 = 50, \\ 65 = 40, \\ 90 = 15; \end{cases}$

$\sqrt{105\times 50\times 40\times 15} = \sqrt{3150000} = 1774.823$, area in sq. rds. of one triangle;

$\frac{30+80+90}{2} = 100$; $100 - \begin{cases} 30 = 70, \\ 80 = 20, \\ 90 = 10; \end{cases}$

$\sqrt{100\times 70\times 20\times 10} = \sqrt{1400000} = 1183.214$, area in sq. rds. of 2d triangle;

1774.823 sq. rds. + 1183.214 sq. rds. = 2958.037 sq. rds.
= 18.487 + acres, *Ans.*

3. $\frac{40+38+42}{2} = 60$; $60 - \begin{cases} 40 = 20, \\ 38 = 22, \\ 42 = 18; \end{cases}$

$\sqrt{60\times 20\times 22\times 18} = \sqrt{475200} = 689.34+$, area in sq. ch. of one triangle;

$\frac{30+35+42}{2} = 53.5$; $53.5 - \begin{cases} 30 = 23.5, \\ 35 = 18.5, \\ 42 = 11.5; \end{cases}$

$\sqrt{53.5\times 23.5\times 18.5\times 11.5} = \sqrt{267479.9375} = 517.18+$, area in sq. ch. of 2d triangle,

689.84+ sq. ch. + 517.18+ sq. ch. = 1206.52+ sq. ch.
= 120.652+ acres, *Ans.*

4. $\frac{36+38+68}{2} = 71;\qquad 71 - \left\{\begin{array}{l} 36 = 35, \\ 38 = 33, \\ 68 = \ \ 3; \end{array}\right.$

$\sqrt{71 \times 35 \times 33 \times 3} = \sqrt{246015} = 495.998+$, area in sq. ch. of one triangle;

$\frac{60+65+68}{2} = 96.5;\qquad 96.5 - \left\{\begin{array}{l} 60 = 36.5, \\ 65 = 31.5, \\ 68 = 28.5; \end{array}\right.$

$\sqrt{96.5 \times 36.5 \times 31.5 \times 28.5} = \sqrt{3162099.9375} = 1778.229+$, area in sq. ch. of 2d triangle;

495.998 + sq. ch. + 1778.229 + sq. ch. = 2274.227 + sq ch.
= 227.4227 + acres;

$75 × 227.4227 = $17056.70, *Ans.*

Art. 664.

2. (20 + 32) × 30 = 1560, area in sq. rds.

3. (48 + 30) × 40 = 3120, area in sq. rds. = 19.5 acres, *Ans.*

Art. 666.

2. 628.32 rds. ÷ 3.1416 = 200 rds., *Ans.*

3. 180 rds. × 3.1416 = 565.488 rds., *Ans.*

4. 1500 ft. ÷ 3.1416 = 477.463 + ft., *Ans.*

5. (60 ft. × 2) × 3.1416 = 376.992 ft., *Ans.*

Art. 668.

3. $160^2 \times .7854 = 20106.24$, area in sq. ft.

4. $120^2 = 14400$, area in sq. rds. of square;
$120^2 \times .7854 = \underline{11309.76}$, " " " circle.
3090.24 sq. rds. difference.

5. 1 acre = 43560 sq. ft.;
$\sqrt{43560 \div 3.1416} = \sqrt{13865.5462} = 117.75+$, length in ft., *Ans.*

6. $90^2 \times .7854 = 6361.74$, area in sq. yds.

7. 16 acres = 2560 sq. rds.;

$\sqrt{2560 \div 3.1416} = \sqrt{814.8714} = 28.54+$ radius in rds.

$= 57.08+$ rds. diameter.

8. 7 ft. 6 in. = 90 in.; 3 ft. 8 in. = 44 in.

$\sqrt{(90 \times 44) \div 3.1416} = \sqrt{1260.5041}+ = 35.503+$ radius in inches

$= 71.006+$ in. diameter

$= 5.917+$ ft. diameter, *Ans.*

9. 10 acres = 1600 sq. rds.;

$\sqrt{1600} = 40$, No. rds. on a side of square;

40 × 4 = 160, No. rds. around the square;

$\sqrt{1600 \div 3.1416} = \sqrt{509.29462} = 22.567$ rds. = radius of circle.

22.567 rds. × 2 × 3.1416 = 141.7929+ rds., circum. of circle;

160 rds. − 141.7929+ rds. = 18.207 rds. more around square;

$1.50 × 18.207 = $27.31, *Ans.*

Art. 674.

2. (16 × 4) × 20 = 1280, No. sq. ft. in convex surface.

3. (8 × 4) × 30 = 960, No. sq. ft. in convex surface.

(8 × 8) × 2 = 128, " " " base surfaces.

1088, " " " entire surface.

4. (30 × 18) × 4 = 2160, No. sq. ft. of surface = 240 sq. yds., at $.25

= $60, *Ans.*

Art. 676.

2. $\sqrt{30 \times 10 \times 10 \times 10} = \sqrt{30000} = 173.205+$ sq. in., area of base;

173.205 × 30 = 5196.15 cu. in. = volume.

3. $(\frac{9}{2} \times \frac{9}{2}) \times 18 = 364.5$ cu. ft. = volume;

$2.75 × 364.5 = $1002.375, *Ans.*

4. $(3 \times \frac{5}{2}) \times 10 = 75$ cu. ft. = volume;

168.75 lb. × 75 = 12656.25 lb., *Ans.*

5. 8 × 8 × 8 = 512, cu. ft. = volume,

8 × 8 × 6 = 384, sq. ft. = surface.

128, more cu. ft.

Art. 679.

2. $(6\frac{1}{2} \times 2 \times 3.1416) \times 35 = 1429.428+$ sq. in. = convex surface,
$6.5^2 \times 3.1416 \times 2 = 265.465+$ " = base surfaces,
$1694.893+$ " = entire surface.

3. $(1.5 \times 3.1416) \times 4.5 = 21.2058$ sq. ft. = convex surface.

4. $(1.25 \times 3.1416) \times 12 = 47.124+$ sq. ft. = convex surface,
$1.25^2 \times .7854 \times 2 = 2.454+$ " = base surfaces.
$49.578+$ " = entire surface.

Art. 681.

2. $(10^2 \times .7854) \times 12 = 942.48$ cu. ft. = volume;
$\frac{942.48 \times 1728}{231} = 7050.24$ = capacity in gallons.

3. $[(1\frac{1}{2})^2 \times .7854] \times 20 = 35.343$ cu. ft. = volume.

4. $(18.5^2 \times .7854) \times 8 = 2150.4252+$ cu. in. = capacity.

5. $(14^2 \times .7854) \times 14 = 2155.1376$ cu. in. = capacity of cylinder.
2150.4252 " = " " bushel.
Capacity of cylinder is 4.7124 " greater.

6. $[(\frac{5}{3})^2 \times .7854] \times 30 = 65.45$ cu. ft. = volume;
169 lb. $\times 65.45 = 11061.05$ lb. = weight.

7. $(10^2 \times .7854) \times 12 = 942.48$ cu. in. = capacity;
$942.48 \div 231 = 4.08$ = capacity in gallons.

Art. 684.

2. $(20 \times 4) \times 25 = 2000$ sq. in. = convex surface,
$20 \times 20 = 400$ " = area of base,
2400 " = entire surface.

3. $(36 \times 3) \times 30 = 3240$ sq. ft. = convex surface.
$\sqrt{54 \times 18 \times 18 \times 18} = \sqrt{314928} = 561.18+$ " = area of base.
$3801.18+$ " = entire surface.

4. $(12\frac{1}{2} \times 6) \times 15 = 1125$ sq. ft. = lateral surface.

5. $(8\frac{1}{2} \times 4) \times (\frac{1}{2} \text{ of } 9\frac{2}{3}) = 164\frac{1}{3}$ sq. ft. = surface of square.
$(8\frac{1}{2} \times 3) \times (\frac{1}{2} \text{ of } 9\frac{2}{3}) = \underline{123\frac{1}{4}}$ " = " " pyramid.
$41\frac{1}{12}$ " , difference.

Art. 686.

2. $(30.5 \times 30.5) \times 25 = 23256.25$ cu. ft. = volume.

3. $\sqrt{30 \times 10 \times 10 \times 10} = \sqrt{30000} = 173.205+$ sq. yds. = area of base;
$173.205 \times 10 = 1732.05+$ cu. yds. = volume.

4. $\sqrt{10.5 \times 4.5 \times 3.5 \times 2.5} = \sqrt{413.4375} = 20.333+$ sq. ft.
= area of base;
$20.333 \times 6\frac{2}{3} = 135.554+$ cu. ft. = volume.

5. $(20 \times 20) \times 20 = 8000$ cu. ft. = volume;
175 lb. × 8000 = 1400000 lb. = weight.

Art. 689.

2. $(36 \times 3.1416) \times 20 = 2261.952$ sq. in. = convex surface.

3. $\sqrt{20^2 + 15^2} = \sqrt{625} = 25$ in. = slant height;
$(30 \times 3.1416) \times 12\frac{1}{2} = 1178.1$ sq. in. = convex surface.
$15^2 \times 3.1416 = \underline{706.86}$ " = area of base,
1884.96 " = entire surface.

4. $(8\frac{1}{3} \times 3.1416) \times 6\frac{1}{4} = 163.625$ sq. ft. = convex surface.

Art. 691.

2. $(24^2 \times .7854) \times 10 = 4523.904$ cu. in. = volume.

3. $(72^2 \times .7854) \times 20 = 81430.272$ cu. in. = volume.

4. $(5^2 \times 3.1416) \times 2.75 = 215.985$ cu. ft. = volume.

Art. 694.

2. $20^2 \times 3.1416 = 1256.64$ sq. ft. = surface.

3. $(\frac{7}{2})^2 \times 3.1416 = 38.4846$ sq. ft. = surface;
\$.60 × 38.4846 = \$23.09 = cost.

Art. 696.

2. $(4^2 \times 3.1416) \times \frac{2}{3} = 33.5104$ cu. ft. = volume.

3. $[(\frac{5}{3})^2 \times 3.1416] \times \frac{5}{18} = 2.424074+$ cu. ft. = volume;

487.5 lb. $\times 2.424074 = 1181.736+$ lb. = weight.

Art. 698.

1. $\frac{24+26}{2} = 25$ in. = mean diameter;

$25^2 \times 36 \times .0034 = 76.5$ = capacity in gallons.

2. $\frac{28+32}{2} = 30$ in. = mean diameter;

$30^2 \times 40 \times .0034 = 122.4$ = capacity in gallons.

3. $\frac{46+42}{2} = 44$ in. = mean diameter;

$44^2 \times 60 \times .0034 = 394.944$ = capacity in gallons.

Art. 700.

4. $3^2 : 5^2 ::$ \$15.30 : x; $x =$ \$42.50, *Ans.*

5. $13^2 : 19.5^2 ::$ 2.25 acres : x; $x = 5.0625$ acres, *Ans.*

6. $9^2 : 15^2 ::$ \$3 : x; $x =$ \$8⅓, *Ans.*

7. $2\frac{1}{4} : 6\frac{1}{4} :: 9^2$ rods : x^2; $x^2 = 225$; $x = 15$ rods, *Ans.*

Art. 701.

3. $5.5^3 : 6^3 ::$ 160 lb. : x. $x = 207.72+$ lb., *Ans.*

4. $2^3 : 4^3 ::$ \$3⅜ : x; $x =$ \$27, *Ans.*

5. $16^3 : 20^3 ::$ \$3.20 : x; $x =$ \$6.25, *Ans.*

6. $12^3 : 20^3 ::$ \$54 : x; $x =$ \$250, *Ans.*

7. $90^3 : 120^3 ::$ 540 tons : x; $x = 1280$ tons, *Ans.*

8. $3^3 : 8^3 :: 6\frac{3}{4}$ lb. : x; $x = 128$ lb., *Ans.*

Art. 702.

1. $\sqrt{35^2 - 21^2} = \sqrt{784} = 28$ ft. $=$ length;

$28 \times 21 = 588$ sq. ft. $=$ area.

2. $90 \times 160 = 14400 =$ area in sq. rds.;

$\frac{14400}{120} = 120 =$ widths in rds.;

$\sqrt{120^2 + 120^2} = \sqrt{28800} = 169.705+ =$ diagonal in rds.

3. $\sqrt{50^2 - 15^2} = \sqrt{2275} = 47.69+$ ft., *Ans.*

4. $(8^2 \times .7854) \times 12 = 603.1872$ cu. ft. $= 1042307.4816$ cu. in. $=$ capacity;

231 cu. in. $\times 63 = 14553$ cu. in. $=$ capacity of 1 hhd.;

$1042307.4816 \div 14553 = 71.62+$ hhd., *Ans.*

5. $\sqrt{4.5^2 + 5.5^2} = \sqrt{50.5} = 7.106+$ mi. $=$ diagonal.

6. $3.5^2 \times 3.1416 = 38.4846$ sq. ft. $=$ surface.

7. $(3^2 \times 3.1416) \times 3\frac{1}{3} = 94.248$ cu. ft. $=$ volume.

8. $(8 \times 8) \times 4 = 256$ cu. ft. $=$ volume.

9. $\frac{35 + 45}{2} \times 30 = 1200$ sq. rds. $= 7.5$ acres;

$175 \times 7.5 = \$1312.50$, *Ans.*

10. $80^2 \times 3.1416 = 20106.24$ sq. rds $= 125.664$ acres, *Ans.*

11. $\frac{200 \times 200}{25 \times 100} = 16$, No. of lots.

12. $5^3 : 60^3 :: 1 : x$; $x = 1728$, *Ans.*

13. $6 \times 8 \times 12 = 576$ cu. ft. $= 995328$ cu. in. $=$ capacity of bin;

$995328 \div 2150.42 = 462.85+$, capacity of bin in bushels.

14. $[(1\frac{1}{2})^2 \times .7854] \times 20 = 35.343$ cu. ft. $=$ volume.

15. $\frac{45+50+40}{2} = 67.5;\qquad 67.5 - \left\{\begin{array}{l} 45 = 22.5, \\ 50 = 17.5, \\ 40 = 27.5; \end{array}\right.$

$\sqrt{67.5 \times 22.5 \times 17.5 \times 27.5} = \sqrt{730898.4375} = 854.92+$ sq. ft.
= area of one triangle;

$\frac{10+48+50}{2} = 54;\qquad 54 - \left\{\begin{array}{l} 10 = 44, \\ 48 = \ \ 6, \\ 50 = \ \ 4; \end{array}\right.$

$\sqrt{54 \times 44 \times 6 \times 4} = \sqrt{57024} = 238.79+$ sq. ft.
= area of 2d triangle:

238.79 sq. ft. + 854.92 sq. ft. = 1093.71+ sq. ft. = entire area.

16. $\frac{12 \times 200 \times 144}{4 \times 8} = 10800$, the No. bricks.

17. $\frac{48 \times 5280}{6 \times 3.1416} = 13445.38$, the No. revolutions.

18. $124 \times 84 = 10416$ sq. ft. = area of garden and walk,
$100 \times 60 = \underline{\ 6000\ }$ " = " " "
4416 " = " " walk.

19. $\frac{16}{16}$ or entire enclosure $- \frac{7}{16} = \frac{9}{16}$ = area of square within drive.
Hence, $\frac{16}{16} : \frac{9}{16} :: 8^2 : x^2$,
or $16 : 9 :: 8^2 : x^2$.
Whence, $x^2 = 36$, and $x = 6$, the side of the inner square.
8−6 = 2, No. rds. in twice the width of the drive.
Hence, the drive is 1 rod wide.

20. $\sqrt{40 \times 160} = 80$ rds. = 1 side of square;
80 rds. × 4 = 320 rds. around square.

21. 1176 sq. ft. ÷ 6 = 196 sq. ft. = area of 1 face of cube;
$\sqrt{196} = 14$ ft. = 1 edge of cube;
$14 \times 14 \times 14 = 2744$ cu. ft. = volume.

22. $\sqrt{24^2+18^2} = \sqrt{900} = 30$ ft. = diagonal of floor:
$\sqrt{30^2+12^2} = \sqrt{1044} = 32.31+$ ft. = diagonal from corner below to corner above.

23. $2^3 : 2\frac{1}{2}^3 :: 75¢ : x;\qquad x = \$1.46$, *Ans.*

24. 16 in. × 4 = 64 in. = $5\frac{1}{3}$ ft. = allowance for corners.
$(60+60+40+40-5\frac{1}{3}) \times 1\frac{1}{3} \times 30 = \frac{584}{3} \times \frac{4}{3} \times 30 = 7786\frac{2}{3}$ cu. ft.
= volume of walls.

Art. 714.

1. $\left.\begin{array}{l}\text{G. C. D. of 3 and 5} = 1\\ \text{L. C. M. “ 4 “ 6} = 12\end{array}\right\}\ \frac{1}{12},$ *Ans.*

2. $\left.\begin{array}{l}\text{G. C. D. of 8 and 6} = 2\\ \text{L. C. M. “ 9 “ 7} = 63\end{array}\right\}\ \frac{2}{63},$ *Ans.*

3. $\left.\begin{array}{l}\text{G. C. D. of 4 and 6} = 2\\ \text{L. C. M. “ 5 “ 7} = 35\end{array}\right\}\ \frac{2}{35},$ *Ans.*

4. $\left.\begin{array}{l}\text{G. C. D. of 3 and 9} = 3\\ \text{L. C. M. “ 5 “ 10} = 10\end{array}\right\}\ \frac{3}{10},$ *Ans.*

5. $\left.\begin{array}{l}\text{G. C. D. of 14 and 21} = 7\\ \text{L. C. M. “ 5 “ 4} = 20\end{array}\right\}\ \frac{7}{20},$ *Ans.*

6. $\left.\begin{array}{l}\text{G. C. D. of 15 and 25} = 5\\ \text{L. C. M. “ 4 “ 6} = 12\end{array}\right\}\ \frac{5}{12},$ *Ans.*

7. $\left.\begin{array}{l}\text{G. C. D. of 8 and 12} = 4\\ \text{L. C. M. “ 9 “ 5} = 45\end{array}\right\}\ \frac{4}{45},$ *Ans.*

8. $\left.\begin{array}{l}\text{G. C. D. of 7 and 35} = 7\\ \text{L. C. M. “ 8 “ 6} = 24\end{array}\right\}\ \frac{7}{24},$ *Ans.*

9. $\left.\begin{array}{l}\text{G. C. D. of 3, 5, and 2} = 1\\ \text{L. C. M. “ 4, 6, “ 3} = 12\end{array}\right\}\ \frac{1}{12},$ *Ans.*

10. $\left.\begin{array}{l}\text{G. C. D. of 8, 4, and 2} = 2\\ \text{L. C. M. “ 9, 5, “ 15} = 45\end{array}\right\}\ \frac{2}{45},$ *Ans.*

11. $\left.\begin{array}{l}\text{G. C. D. of 4, 2, and 7} = 1\\ \text{L. C. M. “ 5, 3, “ 15} = 15\end{array}\right\}\ \frac{1}{15},$ *Ans.*

12. $\left.\begin{array}{l}\text{G. C. D. of 5, 5, and 10} = 5\\ \text{L. C. M. “ 6, 9, “ 27} = 54\end{array}\right\}\ \frac{5}{54},$ *Ans.*

13. $\left.\begin{array}{l}\text{G. C. D. of 15, 18, and 27} = 3\\ \text{L. C. M. “ 4, 7, “ 2} = 28\end{array}\right\}\ \frac{3}{28},$ *Ans.*

14. $\left.\begin{array}{l}\text{G. C. D. of 14, 21, and 49} = 7\\ \text{L. C. M. “ 5, 2, “ 4} = 20\end{array}\right\}\ \frac{7}{20},$ *Ans.*

15. $\left.\begin{array}{l}\text{G. C. D. of 22, 33, and 55} = 11\\ \text{L. C. M. “ 3, 7, “ 14} = 42\end{array}\right\}\ \frac{11}{42},$ *Ans.*

16. $\left.\begin{array}{l}\text{G. C. D. of 9, 27, and 9} = 9\\ \text{L. C. M. “ 4, 8, “ 2} = 8\end{array}\right\}\ 1\frac{1}{8},$ *Ans.*

Art. 715.

1. $\left.\begin{array}{l}\text{G. C. D. of 371 and 315} = 7\\ \text{L. C. M. “ \ 8 “ \ 8} = 8\end{array}\right\} = \frac{7}{8}$ gal., the size of the required demijohn.

$\dfrac{46\frac{3}{8}+39\frac{3}{8}}{\frac{7}{8}} = \frac{343}{8} \times \frac{8}{7} = \frac{392}{4} = 98$, the No. of demijohns.

2. $\left.\begin{array}{l}\text{G. C. D. of 459 and 369} = 9\\ \text{L. C. M. “ \ 16 “ \ 8} = 16\end{array}\right\} = \frac{9}{16}$ lb., the weight of the loaf.

3. $\left.\begin{array}{l}\text{G. C. D. of 1125 and 825} = 75\\ \text{L. C. M. “ \ 4 “ \ 2} = 4\end{array}\right\} = 18\frac{3}{4}$ yds., the length of each dress pattern.

4. $\left.\begin{array}{l}\text{G. C. D. of 525 and 345} = 15\\ \text{L. C. M. “ \ 16 “ \ 8} = 16\end{array}\right\} = \frac{15}{16} =$ the grocer's pound weight.

$\frac{16}{16}$ or 1 lb. $- \frac{15}{16} = \frac{1}{16}$, deficiency of weight on each lb.

5. $\left.\begin{array}{l}\text{G. C. D. of 273; 315, and 483} = 21\\ \text{L. C. M. “ \ 4, \ 4, “ \ 4} = 4\end{array}\right\} = 5\frac{1}{4}$, the size in gallons of the required keg;

$\dfrac{68\frac{1}{4}+78\frac{3}{4}+120\frac{3}{4}}{5\frac{1}{4}} = \frac{1071}{4} \times \frac{4}{21} = 51$, the No. of kegs.

6. $\left.\begin{array}{l}\text{G. C. D. of 765, 495, and 585} = 45\\ \text{L. C. M. “ \ 8, \ 4, “ \ 2} = 8\end{array}\right\} = 5\frac{5}{8}$, the size in gal. of the required vessel.

7. $\left.\begin{array}{l}\text{G. C. D. of 429, 351, and 195} = 39\\ \text{L. C. M. “ \ 10, \ 5, “ \ 2} = 10\end{array}\right\} = 3\frac{9}{10}$, the amount in dollars that he must receive per day, which is \$$\frac{9}{10}$ more than \$3.

Art. 718.

1. $\left.\begin{array}{l}\text{L. C. M. of 3 and 9} = 9\\ \text{G. C. D. “ \ 5 “ \ 10} = 5\end{array}\right\} = 1\frac{4}{5}$, *Ans.*

2. $\left.\begin{array}{l}\text{L. C. M. of 2 and 4} = 4\\ \text{G. C. D. “ \ 3 “ \ 5} = 1\end{array}\right\} = 4$, *Ans.*

3. $\left.\begin{array}{l}\text{L. C. M. of 8 and 3} = 24\\ \text{G. C. D. “ \ 9 “ \ 4} = 1\end{array}\right\} = 24$, *Ans.*

4. $\left.\begin{array}{l}\text{L. C. M. of 7 and 9} = 63\\ \text{G. C. D. “ \ 8 “ \ 10} = 2\end{array}\right\} = 31\frac{1}{2}$, *Ans.*

5. $\left.\begin{array}{l}\text{L. C. M. of 9 and 18} = 18\\ \text{G. C. D. “ \ 2 “ \ 5} = 1\end{array}\right\} = 18$, *Ans.*

6. L. C. M. of 35 and 25 = 175
G. C. D. " 6 " 3 = 3 } = $58\frac{1}{3}$, *Ans.*

7. L. C. M. of 21 and 49 = 147
G. C. D. " 8 " 5 = 1 } = 147, *Ans.*

8. L. C. M. of 35 and 77 = 385
G. C. D. " 8 " 12 = 4 } = $96\frac{1}{4}$, *Ans.*

9. L. C. M. of 2, 3, and 5 = 30
G. C. D. " 3, 4, " 8 = 1 } = 30, *Ans.*

10. L. C. M. of 5, 7, and 14 = 70
G. C. D. " 9, 12, " 15 = 3 } = $23\frac{1}{3}$, *Ans.*

11. L. C. M. of 5, 7, and 2 = 70
G. C. D. " 6, 8, " 3 = 1 } = 70, *Ans.*

12. L. C. M. of 1, 8, and 2 = 8
G. C. D. " 2, 15, " 3 = 1 } = 8, *Ans.*

13. L. C. M. of 8, 12, and 20 = 120
G. C. D. " 7, 5, " 3 = 1 } = 120, *Ans.*

14. L. C. M. of 11, 29, and 67 = 21373
G. C. D. " 4, 8, " 12 = 4 } = $5343\frac{1}{4}$, *Ans.*

15. L. C. M. of 29, 89, and 142 = 366502
G. C. D. " 5, 10, " 15 = 5 } = $73300\frac{2}{5}$, *Ans.*

16. L. C. M. of 32, 81, and 143 = 370656
G. C. D. " 7, 14, " 21 = 7 } = $52950\frac{6}{7}$, *Ans.*

Art. 719.

1. L. C. M. of 11 and 23 = 253
G. C. D. " 3 " 6 = 3 } = $84\frac{1}{3}$, the least No. of miles required.

2. L. C. M. of 45 and 27 = 135
G. C. D. " 8 " 4 = 4 } = $33\frac{3}{4}$, the least No. of dollars required.

3. L. C. M. of 7 and 8 = 56
G. C. D. " 4 " 3 = 1 } = 56, the least No. required.

4. L. C. M. of 11, 55, and 22 = 110
G. C. D. " 2, 8, " 3 = 1 } = 110, No. yds. in length.

5. L. C. M. of 17, 5, and 15 = 255
G. C. D. " 8, 2, " 4 = 2 } = $127\frac{1}{2}$, the least No. bu. required.

Art. 727.

1. $\frac{6}{9}=\frac{2}{3}$; $\frac{3}{9}=\frac{1}{3}$; $\frac{279}{991}=\frac{31}{111}$; $\frac{571428}{999999}=\frac{63492}{111111}=\frac{21164}{37037}=\frac{4}{7}$.

2. $\frac{315}{999}=\frac{35}{111}$; $\frac{1728}{9999}=\frac{192}{1111}$; $\frac{459}{999}=\frac{51}{111}=\frac{17}{37}$; $\frac{187}{999}=\frac{187}{999}$; $\frac{495}{999}=\frac{55}{111}$.

3. $\frac{39}{99}=\frac{13}{33}$; $\frac{81}{99}=\frac{9}{11}$; $\frac{351}{999}=\frac{39}{111}=\frac{13}{37}$; $\frac{4185}{9999}=\frac{465}{1111}$; $\frac{314181}{999999}=\frac{34909}{111111}=\frac{4987}{15873}$.

Art. 729.

1. $\frac{333}{990}=\frac{111}{330}=\frac{37}{110}$; $\frac{4500}{9900}=\frac{5}{11}$; $\frac{630}{990}=\frac{7}{11}$; $\frac{755}{900}=\frac{151}{180}$; $\frac{125100}{999000}=\frac{139}{1110}$; $\frac{740}{990}=\frac{74}{99}$.

2. $2\frac{25}{90}=2\frac{5}{18}=\frac{41}{18}$; $4\frac{21}{90}=4\frac{7}{30}=\frac{127}{30}$; $1\frac{78}{90}=\frac{168}{90}$; $1\frac{338}{990}=\frac{1328}{990}$.

3. $2\frac{336}{990}=2\frac{112}{330}=2\frac{56}{165}=\frac{386}{165}$; $5\frac{67}{90}=\frac{517}{90}$; $8\frac{1251}{9900}=8\frac{139}{1100}=\frac{8939}{1100}$; $\frac{3231}{9900}=\frac{359}{1100}$; $\frac{171}{900}=\frac{19}{100}$.

Art. 733.

1.

$$\begin{array}{r}
75.\dot{7}5757\dot{5}\\
83.\dot{8}3183\dot{1}\\
7.\dot{0}1501\dot{5}\\
32.\dot{7}7777\dot{7}\\
\hline
199.\dot{3}8220\dot{0}
\end{array}$$

2.

$$\begin{array}{r}
38.3\dot{1}9319\dot{3}\\
47.4\dot{7}3737\dot{3}\\
\hline
85.7\dot{9}3056\dot{6}\\
\hline
19.1\dot{9}1919\dot{1}\\
23.2\dot{3}1231\dot{2}\\
\hline
42.4\dot{2}3150\dot{4}\\
\hline
43.3\dot{6}9906\dot{2}
\end{array}$$

3.

$$\begin{array}{r}
3.8\dot{1}93\dot{8}\\
47.4\dot{7}47\dot{4}\\
\hline
51.2\dot{9}41\dot{2}\\
16.\dot{7}777\dot{7}\\
\hline
34.5\dot{1}63\dot{5}\\
8.0\dot{1}31\dot{3}\\
\hline
42.5\dot{2}94\dot{8}
\end{array}$$

4.

$$\begin{array}{r}
.\dot{4}7347347347\dot{3}\\
.\dot{6}1816181618\dot{1}\\
8.\dot{2}1631721631\dot{7}\\
\hline
9.\dot{3}0795250597\dot{2}\\
5.\dot{1}7171717171\dot{7}\\
\hline
4.\dot{1}3623533425\dot{5}\\
11.\dot{1}1111111111\dot{1}\\
\hline
15.\dot{2}4734644536\dot{6}
\end{array}$$

5.

$$\begin{array}{r} 5.5\dot{1}11111\dot{1} \\ 7.7\dot{3}1313\dot{1} \\ \hline 13.\dot{2}42424\dot{2} \\ 1.8\dot{3}8383\dot{8} \\ \hline 11.\dot{4}04040\dot{4} \\ .\dot{1}73173\dot{1} \\ \hline 11.2\dot{3}0867\dot{2} \end{array}$$

Art. 743.

1. $\frac{23040}{72} = 320$, No. farms in township.

2. $\$2.25 \times 160 = \$360$, cost of S. E. $\frac{1}{4}$ section.

3. $\$1.75 \times (80 + 160) = \$420$, *Ans.*

4. 40 A. = 6400 sq. rds.; $\sqrt{6400} = 80$, No. rds. on a side;
$\$.75 \times (80 \times 4) = \$240$, *Ans.*

5. $\$1.25 \times 80 = \$100$, *Ans.*

6. $\$5.75 - \$2.25 = \$3.50$, gain on 1 acre;
$\$3.50 \times 160 = \$560$, gain on all.

Art. 746.

2.

$$\begin{array}{r} 9 \text{ ft. } 6' \\ 3 \text{ ft. } 5' \\ \hline 3 \text{ sq. ft. } 11'\ 6'' \\ 28 \text{ sq. ft. } 6' \\ \hline 32 \text{ sq. ft. } 5'\ 6'' \end{array}$$

3.

$$\begin{array}{r} 9 \text{ ft. } 6' \\ 4 \text{ ft. } 8' \\ \hline 6 \text{ sq. ft. } 4' \\ 38 \text{ sq. ft.} \\ \hline 44 \text{ sq. ft. } 4' \\ 3 \text{ ft. } 4' \\ \hline 14 \text{ cu. ft. } 9'\ 4'' \\ 133 \text{ cu. ft.} \\ \hline 147 \text{ cu. ft. } 9'\ 4'' \end{array}$$

4.

$$\begin{array}{r} 5 \text{ ft. } 10' \\ 5 \text{ ft. } 10' \\ \hline 4 \text{ sq. ft. } 10'\ 4'' \\ 29 \text{ sq. ft. } 2' \\ \hline 34 \text{ sq. ft. } 0'\ 4'' \\ 4 \text{ ft. } 8' \\ \hline 22 \text{ cu. ft. } 8'\ 2''\ 8''' \\ 136 \text{ cu. ft. } 1'\ 4'' \\ \hline 158 \text{ cu. ft. } 9'\ 6''\ 8''' \end{array}$$

5.

$$\begin{array}{r} 14 \text{ ft. } 8' \\ 1 \text{ ft. } 2' \\ \hline 2 \text{ sq. ft. } 5'\ 4'' \\ 14 \text{ sq. ft. } 8' \\ \hline 17 \text{ sq. ft. } 1'\ 4'' \end{array}$$

Art. 750.

1. $\frac{1928}{8} = 241$, No. of sheets.

2. $241 \times 24 = 5784$, the No. 12mo pages.
   $5784 \div 482 = 12$, the No. of books.

3. 6000 lb. $\div$ 60 lb. $= 100$, the No. bushels.

4. $\frac{2000 \times 8\frac{1}{2}}{68} = 250$, the No. bushels.

5. $\frac{44 \times 28 \times 12}{231} = 64$, the No. gallons.

6. $62\frac{1}{2}$ lb. $\times (3^2 \times .7854 \times 6) = 2650.725$ lb., *Ans.*

7. $360 \times 60 \times 1.152\frac{2}{3} = 24897.6$, the No. common miles, *Ans.*

8. $8\frac{1}{3}$ lb. $\times 63 = 525$ lb., *Ans.*

9. $\frac{144 \times 7000}{5760} = 175$, No. lb. Troy. *Ans.*

10. $\frac{12 \times 10 \times 6}{40} = 18$, the No. tons, *Ans.*

11. $\frac{2150.42 \times 1000}{2216.192} = 970.32+$, the No. English bu., *Ans.*

12. $16\frac{1}{2} \times 4 = 66 =$ height in inches, *Ans.*

13. $\frac{225 \times 22 \times 1.5}{24.75} = 300$, the No. perches, *Ans.*

14. $\frac{12 \times 8 \times 6 \times 1728}{2150.42} = 462.85+$, the No. bushels, *Ans.*

Art. 752.

1.

yr.	mo.	da.
1880	3	16
1879	11	1
	4 mo.	15 da., 1st method.

$$\left.\begin{array}{l}\text{Nov. 1 to Mch. } 1 = 4 \text{ mo.}\\ \text{Mch 1 to Mch. } 16 = 15 \text{ da.}\end{array}\right\}\text{ 2d method.}$$

$29 + 31 + 31 + 29 + 16 = 136$ da., 3d method.

2.

yr.	mo.	da.
1868	3	1
1863	6	18

4 yrs. 8 mo. 13 da., 1st method.

June 18, '63, to June 18, '67 = 4 yrs.
June 18, '67, to Feb. 18, '68 = 8 mo. } 2d method.
Feb. 18 to Mar. 1 = 12 da.

4 yrs. + (12 + 31 + 31 + 30 + 31 + 30 + 31 + 31 + 29 + 1) da.
= 4 yrs. 257 da., 3d method.

3.

yr.	mo.	da.
1884	12	15
1884	1	3

11 mo. 12 da., 1st method.

Jan. 3 to Dec. 3 = 11 mo.
Dec. 3 to Dec. 15 = 12 da. } 2d method.

28 + 29 + 31 + 30 + 31 + 30 + 31 + 31 + 30 + 31 + 30 + 15
= 347 da., 3d method.

4.

yr.	mo.	da.
1884	4	14
1883	12	29

3 mo. 15 da., 1st method.

Dec. 29 to Mch. 29 = 3 mo.
Mch. 29 to Apr. 14 = 16 da. } 2d method.

2 + 31 + 29 + 31 + 14 = 107 da., 3d method.

5.

yr.	mo.	da.
1884	3	3
1881	8	29

2 yrs. 6 mo. 4 da., 1st method.

Aug. 29, '81, to Aug. 29, '83 = 2 yrs.
Aug. 29 to Feb. 29 = 6 mo. } 2d method.
Feb. 29 to Mch. 3 = 3 da.

2 yrs. + (2 + 30 + 31 + 30 + 31 + 31 + 29 + 3) da.
= 2 yrs. 187 da., 3d method.

Art. 754.

1.
.30
.015
.004
.319
$890 × .319 = $283.91, *Ans.*

2.
.18
.025
.003
.208
$1875 × .208 = $390, *Ans.*

3.
.35
.00416
.00319
.35735
$3600 × .35735 = $1286.46, *Ans.*

4.
.05333
.006
.05933
$1275 × .05933 = $75.65, *Ans.*

5.
.07
.06416
.00544
.1396
$123.75 × .1396 = $17.28, *Ans.*

6.
.21
.02916
.00505
.24421
$235.50 × .24421 = $57.51, *Ans.*

7.
.30
.025
.00416
.32916
$1323.60 × .32916 = $435.68, *Ans.*

8.
.20
.01666
.00194
.2186
$2387.50 × .2186 = $521.91, *Ans.*

9.
.40
.06
.00555
.46555
$750 × 1.46555 = $1099.16,
amount, *Ans.*

10.
.15
.01666
.00402
.17068
$3800 × 1.17068 = $4448.58,
am't, *Ans.*

11. Time = 3 yrs. 8 mo. 11 da.
.18
.04
.00183
.22183
$8600 × .22183 = $1907.74, *Ans.*

12. .30
.01666
.00319
.31985
$3600 × 1.31985 = $4751.46, am't, *Ans.*

13. Time = 2 yrs. 8 mo. 18 da.
.10
.03333
.0025
.13583
$3570 × 1.13583 = $4054.91, am't, *Ans.*

14. Time = 8 mo. 10 da.
.04
.00166
.04166
$18600 × .04166 = $774.88, *Ans.*

15. Time = 2 yrs. 5 mo. 28 da.
.14
.02916
.00544
.1746
$68000 × .1746 = $11872.80, *Ans.*

16. Time = 2 yrs. 10 mo. 25 da.
.10
.04166
.00347
.14513
$5000 × .14513 = $725.65, *Ans.*

Art. 758.

1. $520 × 1.157625 = $601.965 ; $601.965 − $520 = $81.97, *Ans.*

2. $960 × 1.362897 = $1308.38, *Ans.*

3. $340 × 1.125509 = $382.67 ; $382.67 − $340 = $42.67, *Ans.*

4. $600 × 2.191123 = $1314.67 ; $1314.67 − $600 = $714.67, *Ans.*

5. 8% semi-annually 2 yrs. = 4% for 4 yrs.
$500 × 1.169859 = $584.93, *Ans.*

6. $8360 × 1.216653 = $10171.22 ;
$10171.22 − $8360 = $1811.22, *Ans.*

7. 10% quarterly 4 yrs. 3 mo. = 2½% for 17 yrs.
$4600 × 1.521618 = $6999.44, 4 yrs. 3 mo.
$6999.44 × .005 = 34.997, 18 da.
$7034.44, amount.

8. 6% semi-annually 3 yrs. 6 mo. = 3% for 7 yrs.

$\$3760 \times 1.229874 = \$4624.326$, 3 yrs. 6 mo.
$\$4624.326 \times .029 = 134.105$, 5 mo. 24 da.
$\$4758.43$, amount.

9. $\$100 \times 1.989789 = \$198.98$, *Ans.*

10. Time = 17 yrs. 9 mo. 23 da.

$\$1800 \times 1.947901 = \$3506.221$, 17 yrs.
$\$3506.221 \times .032\frac{5}{9} = 114.146$, 9 mo. 23 da.
$\$3620.367$, amount.

$\$3620.37 - \$1800 = \$1820.37$, *Ans.*

Art. 763.

4. $\$.41 \times 12600 = \$5166$, *Ans.*

5. $\$4.87 \times 860.75 = \$4191.8525$, cost less brokerage,
$\$4191.352 \times .005 = 20.96$, brokerage,
$\$4212.81$, cost.

6. $25600 \div 5.18 = \$4942.085$, cost less brokerage,
$\$4942.085 \times .005 = 24.71$, brokerage,
$\$4966.80$, cost.

7. $\frac{\$.965}{4} \times 8800 = \$2123.00$, cost less brokerage,
$\$2123 \times .005 = 10.62$, brokerage.
$\$2133.62$, cost.

8. $20000 \div 5.24 = \$3816.80$, cost less brokerage.
$\$3816.80 \times .005 = 19.08$, brokerage.
$\$3835.88$, cost.

Art. 765.

3. $\$x = 1500$ milreis. 1 milreis = 5.6 francs.
5 francs = 4 marks. 20.45 marks = £1. £1 = $4.86.

$$\$x = \frac{1500 \times 5.6 \times 4 \times 4.86}{5 \times 20.45} = \$1597.03, \textit{ Ans.}$$

4. x bu. wheat = 1000 bu. potatoes. 8 bu. potatoes = 5 bu. corn.
12½ bu. corn = 7 bu. rye. 5 bu. rye = 3 bu. wheat.

$$x = \frac{1000 \times 5 \times 7 \times 3}{8 \times 12.5 \times 5} = 210 \text{ bu. wheat, } \textit{Ans.}$$

5. \$$x$ = 1000 guilders. 12.5 guilders = £1. £1 = \$4.875.

$$x = \frac{1000 \times 4.875}{12.5} = \$390, \textit{ Ans.}$$

6. \$$x$ = 1000 guilders. 1 guilder = 2.2 francs.
25.8 francs = £1. £1 = \$4.88.

$$x = \frac{1000 \times 2.2 \times 4.88}{25.8} = \$416.12, \textit{ Ans.}$$

Art. 768.

2.

$$\begin{array}{rcr}
\$.60 \times 5 & = & \$3.00 \\
.50 \times 3 & = & 1.50 \\
.80 \times 45 & = & 36.00 \\
.70 \times \underline{15} & = & \underline{10.50} \\
68 & &)\,\underline{51.00} \\
 & & \$.75, \textit{ Ans.}
\end{array}$$

3.

$$\begin{array}{rcr}
\$.40 \times 21 & = & \$8.40 \\
.30 \times 42 & = & 12.60 \\
.25 \times \underline{12} & = & \underline{3.00} \\
75 & &)\,\underline{24.00} \\
 & & \$.32, \textit{ Ans.}
\end{array}$$

4.

$$\begin{array}{rcr}
\$.06 \times 50 & = & \$3.00 \\
.08 \times 150 & = & 12.00 \\
.11 \times 75 & = & 8.25 \\
.12 \times \underline{50} & = & \underline{6.00} \\
325 & &)\,\underline{29.25} \\
 & & \$.09, \textit{ Ans.}
\end{array}$$

5.

$$\begin{array}{rcr}
\$1\frac{3}{4} \times 30 & = & \$52.50 \\
2\frac{3}{4} \times 60 & = & 165.00 \\
3\frac{1}{2} \times 30 & = & 105.00 \\
4\frac{1}{2} \times \underline{60} & = & \underline{270.00} \\
180 & &)\,\underline{592.50} \\
 & & \$3.29, \textit{ Ans.}
\end{array}$$

Art. 770.

2.

First Process.

13	8	$\frac{1}{5}$		1		1
	9		$\frac{1}{4}$		1	1
	15		$\frac{1}{2}$		2	2
	18	$\frac{1}{5}$		1		1

Second Process.

13	8	$\frac{1}{5}$		2		2
	9		$\frac{1}{4}$		5	5
	15	$\frac{1}{2}$		5		5
	18		$\frac{1}{5}$		4	4

3.

20	14	$\frac{1}{6}$		2		2	1
	18		$\frac{1}{2}$		2	2	1
	24	$\frac{1}{4}$	$\frac{1}{4}$	3	1	4	2

5.

First Process.

\$.32	\$.25	$\frac{1}{7}$		8
	.28		$\frac{1}{4}$	1
	.36		$\frac{1}{4}$	1
	.40	$\frac{1}{8}$		7

Second Process.

\$.32	\$.25	$\frac{1}{7}$		4
	.28		$\frac{1}{4}$	2
	.36	$\frac{1}{4}$		7
	.40		$\frac{1}{8}$	1

6.

First Process.

\$.28	\$.20	$\frac{1}{8}$		7
	.25		$\frac{1}{3}$	2
	.30		$\frac{1}{2}$	3
	.35	$\frac{1}{7}$		8

Second Process.

\$.28	\$.20	$\frac{1}{8}$		1
	.25		$\frac{1}{3}$	7
	.30	$\frac{1}{2}$		4
	.35		$\frac{1}{7}$	3

7.

First Process.

\$.80	\$.35	$\frac{1}{45}$		2
	1.10	$\frac{1}{30}$		3
	.90		$\frac{1}{10}$	1
	.70		$\frac{1}{10}$	1

Second Process.

\$.80	\$.35	$\frac{1}{45}$		2
	1.10		$\frac{1}{30}$	1
	.90	$\frac{1}{10}$		9
	.70		$\frac{1}{10}$	3

8.

First Process.

\$8	\$3	$\frac{1}{5}$		2
	10	$\frac{1}{2}$		5
	5		$\frac{1}{3}$	2
	14		$\frac{1}{6}$	1

Second Process.

\$8	\$3	$\frac{1}{5}$		6
	10		$\frac{1}{2}$	3
	5		$\frac{1}{3}$	2
	14	$\frac{1}{6}$		5

9.

First Process.

\$1.90	\$1.50	$\frac{1}{40}$		5
	1.75		$\frac{1}{15}$	2
	2.00		$\frac{1}{10}$	3
	2.40	$\frac{1}{50}$		4

Second Process.

\$1.90	\$1.50	$\frac{1}{40}$		1
	1.75		$\frac{1}{15}$	10
	2.00	$\frac{1}{10}$		4
	2.40		$\frac{1}{50}$	3

10. \$198 ÷ 88 = \$2.25.

First Process.

\$2.25	\$1.75	$\frac{1}{50}$		3	6	× 4 =	24
	1.90		$\frac{1}{35}$	5	5		20
	2.50		$\frac{1}{25}$	7	7		28
	3.00	$\frac{1}{75}$		2	4		16

Second Process.

\$2.25	\$1.75	$\frac{1}{50}$		1			22
	1.90		$\frac{1}{35}$		15	× 22 =	15
	2.50	$\frac{1}{25}$		2		× 1 =	44
	3.00		$\frac{1}{75}$		7		7

Art. 775.

1. $8+(15-1)\times 4 = 64$, *Ans.*
2. $100-(20-1)\times 3 = 43$, *Ans.*
3. $191-(45-1)\times 4 = 15$, *Ans.*
4. $7+(31-1)\times 5 = 157$, *Ans.*
5. $\$5+\$10\times(21-1) = \$205$, *Ans*
6. $\$1+\$2\times(20-1) = \$39$, *Ans.*
7. $2\frac{1}{2}$ in. $+ 1\frac{1}{2}$ in. $\times(11-1) = 17\frac{1}{2}$ in., *Ans.*

Art. 777.

1. $5+(30-1)\times 3 = 92$, last term; $\dfrac{5+92}{2}\times 30 = 1455$, sum.
2. $67-(8-1)\times 7 = 18$, first term; $\dfrac{18+67}{2}\times 8 = 340$, sum.
3. $165-(37-1)\times 4 = 21$, last term; $\dfrac{165+21}{2}\times 37 = 3441$, sum.
4. $\$1+(52-1)\times\frac{1}{4} = \$13\frac{3}{4}$, last week,
   $\dfrac{\$1+\$13\frac{3}{4}}{2}\times 52 = \$383\frac{1}{2}$ in all.

Art. 782.

1. $1\times 2^{8-1} = 128$, last term.
2. $1536\times(\frac{1}{2})^{10-1} = 1536\times\frac{1}{512} = 3$, last term.
3. $118098\times(\frac{1}{3})^{11-1} = 118098\times\frac{1}{59049} = 2$, first term.
4. $5\times 2^{15-1} = 81920$, first term.

Art. 784.

1. $3\times 2^{8-1} = 384$, last term; $\dfrac{(384\times 2)-3}{2-1} = 765$, sum.
2. $3645\times(\frac{1}{3})^{7-1} = 3645\times\frac{1}{729} = 5$, first term;
   $\dfrac{(3645\times 3)-5}{3-1} = 5465$, sum.
3. $486\times(\frac{2}{3})^{6-1} = 486\times\frac{32}{243} = 64$, last term;
   $\dfrac{(486\times\frac{3}{2})-64}{\frac{3}{2}-1} = 1330$, sum.

4. $162 \times 2^{5-1} = 2592$, first term; $\frac{(2592 \times 2)-162}{2-1} = 5022$, sum.

5. $\frac{108-(\frac{1}{3} \times 4)}{1-\frac{1}{3}} = 160$, sum.

6. $\frac{31250-(10 \times \frac{1}{5})}{1-\frac{1}{5}} = 39060$, sum.

Art. 791.

2. $\$1200 \times .06 \times 9 = \$648$; $\$1200 + \$648 = \$1848$;
$\frac{\$1200 + \$1848}{2} \times 10 = \$15240$, *Ans.*

3. $\$1500 \times .05 \times 11 = \$825$; $\$1500 + \$825 = \$2325$;
$\frac{\$1500 + \$2325}{2} \times 12 = \$22950$, *Ans.*

4. $\$500 \times .06 \times 19 = \$570$; $\$500 + \$570 = \$1070$;
$\frac{\$500 + \$1070}{2} \times 20 = \$15700$, *Ans.*

Art. 792.

2. $\frac{\$800 \times 1.06^{8}-\$800}{1.06-1} = \$7917.97$, *Ans.*

3. $\frac{\$1000 \times 1.04^{5}-\$1000}{1.04-1} = \$5416.33$, *Ans.*

4. $\frac{\$300 \times 1.05^{20}-\$300}{1.05-1} = \$9919.79$, *Ans.*

5. $\frac{\$1200 \times 1.05^{10}-\$1200}{1.05-1} = \$15093.48$, *Ans.*